

Citations

This list contains known citations in books, journals, proceedings of international conferences and dissertations of research publications of the author (see **Publications**). Citations in preprints and electronic archives, and selfcitations are not included. The reference number of a cited item coincides with its number in the list **Publications**.

Books

- [2] **D. Krupka, Mathematical Foundations of the General Relativity Theory (Matematicke zaklady obecne teorie relativity), textbook in Czech, Faculty of Science, J.E. Purkyne University, Brno, 1979, 130 pp.**
1. O. Stolin, *New Approaches to Unitary Theories* (in Czech), PhD. Dissertation, Masaryk University, Brno, 1999, 78 pp.
- [4] **D. Krupka, Introduction to Analysis on Manifolds (Uvod do analyzy na varietach), textbook in Czech, SPN Praha, 1986, 96 pp.**
1. L. Klapka, *Geometry* (Geometrie), textbook in Czech, Math. Inst. of the Silesian Univ., Opava, Czech Republic, UT2/1999, 73 pp.
- [5] **D. Krupka, Introduction to Global Variational Geometry, Atlantis Press, 2015**
1. Z. Urban, Variational classes and mappings in the second order variational sequence: Explicit formulas, *Kvaternion* 2 (2013) 69-81
 2. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6
 3. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
- [6] **D. Krupka, J. Janyska, Lectures on Differential Invariants, J.E. Purkyne University, Faculty of Science, Brno, Czechoslovakia, 1990, 193 pp.**
1. J. Janyska, Natural and gauge-natural operators on the space of linear connections on a vector bundle, in J. Janyska, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1989; World Scientific, Singapore, 1990, 58-68

2. J. Janyska, Remarks on the Nijenhuis tensor and almost complex connections, *Arch. Math.* 26 (1990) 229-240
3. I. Kolar, General natural bundles and operators, in J. Janyska, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1989; World Scientific, Singapore, 1990, 69-78
4. J. Kurek, On natural operators on sectorform fields, *Cas. pest. mat.* 115 (1990) 232-239
5. J. Janyska, Natural operations with projectable tangent valued forms on a fibred manifold, *Ann. Mat. Pur. Appl.* 159 (1991) 171-187
6. J. Kurek, On the natural operators of Bianchi type, *Arch. Math.* 27 (1991) 25-29
7. I. Kolar, *Natural bundles and operators* (Russian), in *Itogi Nauki i Tekhniki*, Ser. Probl. Geom. 23, VINITI, Moscow, 1991, 67-98
8. A. Cap, J. Slovak, Infinitesimally natural operators are natural, *Diff. Geom. Appl.* 2 (1992) 45-55
9. J. Janyska, M. Modugno, Infinitesimal natural and gauge natural lifts, *Diff. Geom. Appl.* 2 (1992) 99-121
10. J. Kurek, On natural operators transforming vector fields on manifold to second iterated tangent bundle, *Demonstratio Mathematica XXV* (1992) 765-776
11. J. Kurek, *Zastosowania operatorow naturalnych*, Wydawnictwo Uniw. M. Curie-Sklodowskiej, Lublin, 1992
12. Nong Quoc Chinh, *Sheaves of contact forms and acyclic resolutions on finite jet prolongations of a fibred manifold* (Svazky kontaktnich forem a acyklicke rezolventy na konecných jetových prodlouzenich fibrovane variety, in Czech), PhD (CSc) Dissertation, Brno (Czechoslovakia), 1992, 50 pp.
13. J. Slovak, On invariant operations on a manifold with connection or metric, *J. Diff. Geom.* 36 (1992) 633-650
14. J. Gancarzewicz, W. Mikulski, Z. Pogoda, Natural bundles and natural liftings prolongations of geometric structures, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 281-320
15. J. Janyska, Natural 2-forms on the tangent bundle of a Riemannian manifold, Proc. Winter School on Geometry and Topology, Srni, Czechoslovakia, 1992; Suppl. *Rend. del Circolo Mat. di Palermo, Serie II*, 32 (1993) 165-174
16. I. Kolar, Natural operators related with the variational calculus, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 461-472
17. I. Kolar, P.W. Michor, J. Slovak, *Natural Operations in Differential Geometry*, Springer, Berlin-Heidelberg-New York, 1993
18. J. Kurek, On the first order natural operators transforming 1-forms on manifold to linear frame bundle, *Demonstratio Mathematica XXVI* (1993) 287-293
19. J. Slovak, *Natural operators on conformal manifolds*, Vienna Univ., textbook, 1994, 138 pp.
20. V. Studený, Natural vector fields on tangent bundles, *Archivum Mathematicum*, vol. 30 (1994), issue 4, pp. 277-283
21. A. Vondra, Symmetries of connections on fibered manifolds, *Arch. Math.* 30 (1994) 97-115
22. J. Janyska, Remarks on symplectic and contact 2-forms in relativistic theories, *B. Unione Mat. Ital.* 9B (1995) 587-613
23. A. Vondra, Geometry of second order connections and ordinary differential equations, *Math. Bohemica* 120 (1995) 145-167
24. A. Vondra, Towards a geometry of higher order partial differential equations represented by connections on fibered manifolds, Assoc. Prof. (Doc.) Dissertation, Military Academy, Brno, Czech Republic, 1995
25. J. Janyska, Natural quantum Lagrangians in Galilei quantum mechanics, *Rendiconti di Matematica*, VII, Roma, 1995, 1120-7183
26. M. Doupovec, A. Vondra, Natural relations between connections in 2-fibered

- manifolds, in L Tamassy, J. Szenthe, Eds., *New Developments in Differential Geometry*, Proc. Colloq. on Diff. Geom., Debrecen, Hungary, July 1994; Kluwer Academic Publishers, Dordrecht, 1996, 113-130
27. J. Janyska, M. Modugno, Classical particle phase space in general relativity, in J. Janyska, I. Kolar, J. Slovak, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, 1995; Masaryk Univ., Brno, 1996, 573-602
 28. R. Vitolo, Bicomplexi Lagrangiani ed applicazioni alla meccanica relativistica classica e quantistica, Tesi di Dottorato in Matematica, Universita di Firenze, 1996, 175 pp.
 29. J. Janyska, M. Modugno, Relations between linear connections on the tangent bundle and connections on the jet bundle of a fibred manifold, Arch. Math. 32 (1996) 281-288
 30. V. Studeny, General Nijenhuis tensor an example of a secondary invariant, in In Jarolím Bureš and Vladimír Souček (eds.): Proceedings of the Winter School "Geometry and Physics". Circolo Matematico di Palermo, Palermo, 1996. Rendiconti del Circolo Matematico di Palermo, Serie II, Supplemento No. 39. pp. 133-141
 31. R. Miron, The Geometry of Higher Order Lagrange Spaces. Applications to Mechanics and Physics, Kluwer, 1997
 32. R. Miron, M. Anastasiei, *Vector Bundles and Lagrange Spaces with Applications to* , Geometry Balkan Press, Bucharest, Romania, 1997
 33. C. Udriste, I.E. Hiriца, Family of projective projections on tensors and connections, Balkan J. Geom. Appl. 2 (1997) 139-156
 34. W.M. Mikulski, Invariants of lagrangians on Weil bundles and their classification, Geometriae Dedicata 67 (1997) 83-106
 35. I.E. Hiriца, Absolute invariant operators on differentiable manifolds, in Gr. Tsagas, Ed., Proc. workshop on Glob. Anal., Diff. Geom. and Lie Algebras, Geometry, Balkan Press, 1998, 37-51
 36. M.D. Calvo, G.G.R. Keilhauer, Tensor fields of type (0,2) on the tangent bundle of a Riemannian manifold, Geometriae Dedicata 71 (1998) 209-219
 37. J. Janyska, Natural Lagrangians for quantum structures over 4-dimensional space-time, Rend. di Matematica VII, Roma, Italy, ISSN 1120-7183, 1998, vol.
 38. I.E. Hiriца, C. Udriste, Decompositions of tensor fields and connections, in Proc. Internat. workshop on Fundamental Open Problems in Math. Phys. and other Sciences, Beijing, Aug. 1997; Hadronic J. Suppl., USA, 1999
 39. V. Oproiu, N. Papaghiuc, Locally symmetric space structures on the tangent bundle, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 664 pp.
 40. M. Doupovec, A. Vondra, Invariant subspaces in higher order jet prolongations of a fibered manifold, Czechoslovak Math. J. 50 (2000) 209-220
 41. O. Kowalski, M. Sekizawa, On tangent sphere bundles with small or large constant radius, Ann. Glob. Anal. Geom. 18 (2000) 207-219
 42. G.G.R. Keilhauer, Tensor fields of type (0,2) on linear frame bundles and cotangent bundles, Rend. del. Sem. Matematico Univ. Padova, 103 (2000) 51-64
 43. A. Vondra, Higher-Order Differential Equations Represented by Connections on Prolongations of a Fibered Manifold, Extracta Mathematicae 15 (2000) 421-512
 44. R. Miron, D. Hrimiuc, H. Shimada, S.V. Sabau, *The Geometry of Hamilton and Lagrange Spaces*, Kluwer Academic Publishers, 2001
 45. L. Fatibene, M. Francaviglia, M. Palese, Conservation laws and variational sequences in gauge-natural theories, Math. Proc. Cambridge 130 (2001) 555-569
 46. N. Papaghiuc, A locally symmetric pseudo-Riemannian structure on the tangent bundle, Publ. Math. Debrecen 59 (2001) 303-315
 47. J. Janyska, A remark on natural quantum Lagrangians and natural generalized Schrödinger operators in Galilei quantum mechanics, in Proc. of the 20th Winter School "Geometry and Physics", 2001, J. Slovák, M. and Čadek, eds., Rendiconti del Circolo Matematico di Palermo, Serie II, Suppl. No. 66., 2001, pp. 117-128

48. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
49. J. Janyska, M. Modugno, Covariant Schrödinger operator, *J. Phys. A-Math. Gen.* 35 (2002) 8407-8434
50. P. Musilova, *Differential Invariants of Immersions of Manifolds with Metric Fields*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
51. M. Krupka, Order reduction of differential invariants, in *Differential Geometry and its Applications*, Proc. Conf. Part 2, O. Kowalski, D. Krupka, J. Slovak, Eds., Aug. 2001, Opava, Czech Republic; Silesian University, Opava, 2003, 321-334
52. O. Krupkova, A. Vondra, On some integration methods for connections on fibered manifolds, in O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Proc. Conf. Part 2, Aug. 27-31, 2001, Opava, Czech Republic; Silesian University, Opava, 2003, 89-101
53. V. Oproiu, Some classes of natural almost Hermitian structures on the tangent bundle, *Public. Math. Debrecen* 62 (2003) 561-576
54. J. Janyska, M. Modugno, Covariant pre-quantum operators, in O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Proc. Conf. Part 2, Aug. 27-31, 2001, Opava, Czech Republic; Silesian University, Opava, 2003, 295-308
55. M. Doupovec, A. Vondra, On certain natural transformations between connections, in O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Proc. Conf. Part 2, Aug. 27-31, 2001, Opava, Czech Republic; Silesian University, Opava, 2003, 273-279
56. M.T.K. Abbassi, Note on the classification theorems on g -natural metrics on the tangent bundle of a Riemannian manifold (M, g) , *Comm. Math. Univ. Carolinae* 45 (2004) 591-596
57. P. Musilova, J. Musilova, Differential invariants of immersions of manifolds with metric fields, *Commun. Math. Phys.* 249 (2004) 319-329
58. P. Musilova, J. Musilova, Natural operators of smooth mappings of manifolds with metric fields, *Rep. Math. Phys.* 54 (2004) 273-283
59. J. Janyska, Higher order valued reduction theorems for general linear connections, *Note di Matematica* 23 (2004) 75-97
60. M.T.K. Abbassi, M. Sarih, On some hereditary properties of Riemannian g -natural metrics on tangent bundles of Riemannian manifolds, *Diff. Geom. Appl.* 22 (2005) 19-47
61. M. Krbek, J. Musilova, Representation of the variational sequence by differential forms, *Acta Appl. Math.* 88 (2005) 177-199
62. M.T.K. Abbassi, M. Sarih, On Riemannian g -natural metrics of the form $a.g(s)+b.g(h)+c.g(v)$ on the tangent bundle of a Riemannian manifold (M, g) , *Mediterranean J. Math.* 2 (2005) 19-43
63. J. Brajercik, *Higher order invariant variational principles on frame bundles*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2005, 58 pp.
64. M.T.K. Abbassi, M. Sarih, On natural metrics on tangent bundles of Riemannian manifolds, *Arch. Math. (Brno)* 41 (2005) 71-92
65. J. Janyska, Higher-order Utiyama-like theorem, *Rep. Math. Phys.* 58 (2006) 93-118
66. C.L. Bejan, V. Oproiu, Tangent bundles of quasi-constant holomorphic sectional curvatures, *Balkan J. Geom. Appl.* 11 (2006) 11-22
67. J. Janyska, Higher-order Utiyama invariant interaction, *Rep. Math. Phys.* 59 (2007) 63-81
68. M. Doupovec, W.M. Mikulski, Higher-order jet involution, *Czechoslovak Math. J.* 57 (2007) 299-316
69. M. Doupovec, W.M. Mikulski, Holonomic extension of connections and symmetrization of jets, *Rep. Math. Phys.* 60 (2007) 933-946
70. M. Sekizawa, On Riemannian geometry of orthonormal frame bundles, *Note di Matematica* 28 (2008) 383-394

71. J. Brajercik, $GL(n, \mathbb{R})$ -invariant variational principles on frame bundles, *Balkan J. Geom. Appl.* 13 (2008) 11-19
72. O. Kowalski, M. Sekizawa, Invariance on g -natural metrics on tangent bundles, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 171-181
73. M. Doupovec, W.M. Mikulski, Extension of connections, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 223-238
74. V.M. Fedorchuk, V.I. Fedorchuk, On first-order differential invariants of the non-conjugate subgroups of the Poincare group $P(1,4)$, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 431-444
75. A. Patak, Hilbert-Yang-Mills functional: Examples, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 655-664
76. J. Janyska, Natural Lagrangian structures, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166
77. O. Kowalski, M. Sekizawa, Natural lifts in Riemannian geometry, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166
78. P.J. Olver, Invariant variational problems and invariant flows via moving frames, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166
79. B. Kruglikov, V. Lychagin, Differential invariants of the motion group actions, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166
80. A. Patak, *Geometrical Structure of Gauge Theories: Electromagnetism, Gravitation*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2008, 65 pp.
81. M.T.K. Abbassi, g -natural metrics: new horizons in the geometry of tangent bundles of Riemannian manifolds, *Note di Matematica* 28, Suppl. 1 (2008) 6-35
82. O. Kowalski, M. Sekizawa, Invariance of g -natural metrics on linear frame bundles, *Arch. Math.* 44 (2008) 139-147
83. J. Janyska, J. Vondra, Natural principal connections on the principal gauge prolongation of a principal bundle, *Rep. Math. Phys.* 64 (2009) 395-415
84. S.L. Druta, Kähler-Einstein structures of general natural lifted type on the cotangent bundles, *Balkan J. Geom. Appl.* 14 (2009) 30-39
85. V. Oproiu, N. Papaghiuc, Some new geometric structures of natural lift type on the tangent bundle, *Bull. Math. Soc. Sc. Math. Roum.* 52 (2009) 333-346
86. V. Oproiu, N. Papaghiuc, General natural Einstein-Kähler structures on tangent bundles, *Diff. Geom. Appl.* 27 (2009) 384-392
87. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
88. J. Brajercik, Euler-Poincare reduction on frame bundles, *Diff. Geom. Appl.* 29, Suppl. 1 (2011), 33-40
89. M. Doupovec, W.M. Mikulski, On symmetrization of higher order jets, *Miskolc Mathematical Notes* 14 (2013), 495-502
90. J. Navarro Garmendia, Divergence-free tensors associated to a metric, PhD thesis, Universidad de Extremadura, 2013
91. J. Brajercik and M. Demko, Second-order natural Lagrangians on coframe bundles, *Miskolc Mathematical Notes* 14 (2013) 487-494
92. M. Doupovec and W.M. Mikulski, On symmetrization of higher-order jets, Se-

- cond-order natural Lagrangians on coframe bundles, *Miskolc Mathematical Notes* 14 (2013) 495-502
93. Z. Urban, *Variational Principles for Immersed Submanifolds*, in *The Inverse Problem of the Calculus of Variations*, In D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6
- [7] **D. Krupka, O. Krupkova, *Topology and Geometry, Lectures and Solved Exercises (Topologie a geometrie, Prednasky a resene ulohy)*, textbook in Czech, SPN Praha, 1990, 404 pp.; 2001 revised electronic edition**
1. A. Patak, *Geometrical Structure of Gauge Theories: Electromagnetism, Gravitation*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2008, 65 pp.
- [8] **D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 1229 pp.**
1. O. Krupkova, Variational equations on manifolds, Expert Commentary, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 295-299
2. M. Lenc, J. Musilova and L. Czudkova, Lepage forms theory applied, *Arch. Math. (Brno)* 45 (2009), 2009, 279-287
3. S. Preston, Forms of Lepage type and the balance systems, *Diff. Geom. Appl.* 29, Suppl. 1 (2010), 196-206
4. A. Patak, Hamiltonian structure of the Yang-Mills functional, *Diff. Geom. Appl.* 29, Suppl. 1, 251-254
5. Vandana Sharma, Jeff Morgan, Global existence of solutions to reaction diffusion systems with mass transport type boundary conditions, PhD Thesis, Arizona State University, 2015; arXiv:1504.00323v2 [math.AP]
6. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6
7. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
8. D. Canarutto, On the geometry of ghosts, *Rep. Math.Phys.* 78 (2016) 123-156A setting for higher order differential equation fields and higher order Lagrange and Finsler spaces, *J. Geom. Mech.* 5 (2013) 257-279
9. D. Canarutto, Frolicher-smooth geometries, quantum jet bundles and BRST symmetry, *J. Geom. Phys.* 88 (2015) 113-128
- [9] **D. Krupka, *Introduction to Global Variational Geometry*, Atlantis Studies in Variational Geometry, Atlantis Press 2015, Book DOI: 10.2991/978-94-6239-0737, 371 pp.**
1. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170.
2. D. Canarutto, Overconnections and the energy tensors of gauge and gravitational fields, *J. Geom. Phys.* 106, (2016) 192-204
3. M. Palese, O. Rossi, E. Winterroth, J. Musilova, Variational sequences, representation sequences and applications in physics, *Sigma* 12 (2016) 045, 45 pp. <http://dx.doi.org/10.3842/SIGMA.2016.045>
4. A. Mohammadi, M. Maggiore and L. Consolini, On the Lagrangian structure of

reduced dynamics under virtual holonomic constraints, *ESAIM: Control, Optimisation and Calculus of Variations* 23 (2017) 913-935
 DOI: <https://doi.org/10.1051/cocv/2016020>

Book chapters, monographic articles

- [1] **D. Krupka, *Some Geometric Aspects of Variational Problems in Fibered Manifolds*, Folia Fac. Sci. Nat. UJEP Brunensis, Physica 14, Brno, Czech Republic, 1973, 65 pp.; arXiv:math-ph/0110005**
1. J. Novotny, *Modern Methods of Differential Geometry and the Conservation Laws Problem*, Folia Fac. Sci. Nat. UJEP Brunensis, Physica 14, Brno, Czechoslovakia, 1974
 2. V. Aldaya, I.A. de Azcarraga, Noether invariants and canonical symmetries in Lagrangian field theory, *J. Math. Phys.* 19 (1978) 1876-1880
 3. V. Aldaya, I.A. de Azcarraga, Variational principles on r th order jets of fibre bundles in field theory, *J. Math. Phys.* 19 (1978) 1969-1975
 4. J. Novotny, On the geometric foundations of the Lagrange formulation of general relativity, in *Differential Geometry*, Coll. Math. Soc. Janos Bolyai 31, North Holland, 1982, 1979, 503-509
 5. V. Aldaya, I.A. de Azcarraga, *Geometric formulation of classical mechanics and field theory*, *Lei Rivista del Nuovo Cimento* 10 (1980)
 6. J. Novotny, On the inverse variational problem in the classical mechanics, in O. Kowalski, Ed., *Differential Geometry and its Applications*, Proc. Conf., N. Mesto na Morave, Czechoslovakia, Sept. 1980; Charles University, Prague, 1982, 189-195
 7. M. Horak, *On geometry of the Lagrange and Hamilton formalism of higher order*, PhD (CSc)-Dissertation, in Czech, Faculty of Mathematics and Physics, Charles University, Prague, 1982
 8. M. Ferraris, Fibered connections and global Poincare-Cartan forms in higher-order calculus of variations, in O. Kowalski, Ed., *Differential Geometry and its Applications*, Proc. Conf., N. Mesto na Morave, Czechoslovakia, Sept. 1980; Charles University, Prague, 1982, 61-92
 9. M. Ferraris, M. Francaviglia, On the globalization of Lagrangian and Hamiltonian formalisms in higher order mechanics, in *Modern Developments in Analytical Mechanics*, Proc. IUTAM-ISIMM Sympos., Turin, 1982, Eds. S. Benenti, M. Francaviglia, A. Lichnerowicz; Academy of Sciences of Turin, 1983, 109-125
 10. M. Ferraris, M. Francaviglia, On the global structure of Lagrangian and Hamiltonian formalism in higher order calculus of variations, in Proc. Internat. Meeting "Geometry and Physics", Florence, 1982; Pitagora Editrice Bologna 1983, 43-70
 11. P.L. Garcia, J. Munoz, On the geometrical structure of higher order variational calculus, in S. Benenti, M. Francaviglia, A. Lichnerowicz, Eds., *Modern Developments in Analytical Mechanics*, Proc. IUTAM-ISIMM Sympos., Turin, June 1982; Academy of Sciences of Turin, 1983, 127-147
 12. L. Klapka, Integrals of motion and semi-regular Lepage forms in higher-order mechanics, *J. Phys. A-Math. Gen.* 16 (1983) 3783-3794
 13. L. Mangiarotti, M. Modugno, Some results on the calculus of variations in jet spaces, *Ann. Inst. H. Poincare* 39 (1983) 29-43
 14. L. Mangiarotti, M. Modugno, Variational forms, in S. Benenti, M. Francaviglia, A. Lichnerowicz, Eds., *Modern Developments in Analytical Mechanics*, Proc. IUTAM-ISIMM Sympos., Turin, June 1982; Academy of Sciences of Turin, 1983, 247-253
 15. W. Sarlet, *Symmetrieen, eerste integralen en het inverze vraagstuk van den variatierekening*, Doctoral Dissertation, Rijksuniversiteit Gent, Belgium, Faculteit van de Wetenschappen, 1983

16. M. Ferraris, M. Francaviglia, Global formalism in higher order calculus of variations, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 93-118
17. P.L. Garcia, J.M. Masque, Higher order analytical dynamics, Dynamical systems and Partial Differential Equations, Proc. VII ELAM, ed. by L. Lara-Carrero, J. Lewowicz, Univ. Simon Bolivar, Caracas, 1984, 19-47
18. L. Klapka, Euler-Lagrange expressions and closed two-forms in higher order mechanics, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 149-153
19. I. Kolar, Some geometric aspects of the higher order variational calculus, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 155-166
20. O. Krupkova, The local inverse problem of the calculus of variations in higher order Hamiltonian mechanics, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 275-287
21. M. Marvan, On global Lepagean equivalents, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 155-166
22. J. Munoz-Masque, Pre-symplectic structure for higher order variational problems, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 191-206
23. N. Prakash, Projective structures in fibered manifolds, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 221-238
24. J. Sniatycki, The Cauchy data space formulation of classical field theory, Rep. Math. Phys. (Torun) 19 (1984) 407-422
25. A. Trautman, *Differential Geometry for Physicists*, Stony Brook Lectures, Bibliopolis, 1984
26. O. Krupkova, Lepage forms in the calculus of variations, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 27-55
27. R. Vitolo, Finite order variational sequences: A short review, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 99-115
28. D. Canarutto, M. Modugno, Ehresmann's connections and the geometry of energy tensors in Lagrangian field theories, Tensor, N.S. 42, No. 2 (1985) 112-120
29. M. Ferraris, M. Francaviglia, Energy-momentum tensors and stress tensors in geometric field theories, J. Math. Phys. 26 (1985) 1243-1252
30. M. de Leon, P.R. Rodrigues, *Generalized Classical Mechanics and Field Theory*, North-Holland Math. Studies 112, North-Holland, Amsterdam-New York-Oxford, 1985
31. J.M. Masque, An axiomatic characterization of the Poincare-Cartan form for second order variational problems, *Differential Geometric Methods in Mathematical Physics*, Proc. Conf., Clausthal, September 1983; Lecture Notes in Math. 1139, Springer, 1985, 74-84
32. D. Betounes, Utiyama's Lagrangian and external gauge fields, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications, Communications*, Proc. Conf. Vol. 2, Brno, Czechoslovakia, Aug. 1986; J.E. Purkyne Univ., Brno, 1987, 33-42
33. O. Krupkova, Lepagean 2-forms in higher order Hamiltonian mechanics, I. Regularity, Arch. Math. 22 (1986) 97-120

34. D. Betounes, Differential geometric aspects of the Cartan form: Symmetry theory, *J. Math. Phys.* 28 (1987) 2347-2353
35. M. Ferraris, M. Francaviglia, Applications of the Poincare-Cartan form in higher order field theories, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1986; Kluwer Academic Publishers, 1987, 31-52
36. G. Magnano, On the Legendre transformation for a Class of non-regular higher-order field theories, Sissa Digital Library-ISAS, 3401 Trieste, 162 (1988), 1-38
37. D. Betounes, The geometry of gauge-particle field interaction: A generalization of Utyama theorem, *Journ. Geom. Phys.* 6 (1989) 107-125
38. M. Ferraris, M. Francaviglia, Covariant 1st order lagrangians, energy density and superpotentials in general relativity, *Gen. Relat. Gravit.* 22 (1990) 965-985
39. T. Harding, Connections, the Poincare-Cartan form and the Hochschild cohomology of operators, PhD Dissertation, Univ. of Liverpool, U. K., 1990
40. T.J. Harding, F.J. Bloore, A fresh approach to the Poincare-Cartan form for a linear P.D.E. and a map between cohomologies, in J. Janyska, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1989; World Scientific, Singapore, 1990, 220-229
41. G. Magnano, M. Ferraris, M. Francaviglia, On the Legendre transformation for a class of nonregular higher order lagrangian field theories, *J. Math. Phys.* 31 (1990) 378-387
42. J. Novotny, *On the canonical and symmetric energy-momentum tensor in relativistic theories* (O kanonickem a symetrickem tenzoru energie-impulzu v relativistických teoriích, in Czech) Assoc. Prof. (Doc.) Dissertation, Faculty of Science, J.E. Purkyne University, Brno, 1990
43. J.F. Carinena, J. Fernandeznunez, I. Martinez, A geometric approach to Noether 2nd theorem in time-dependent lagrangian mechanics, *Lett. Math. Phys.* 23 (1991) 51-63
44. M. Ferraris, M. Francaviglia, The Lagrangian approach to conserved quantities in general relativity, in *Mechanics, Analysis and Geometry: 200 years after Lagrange*, North Holland, 1991, 451-488
45. A. Vondra, Connections in the geometry of non-autonomous regular higher order dynamics, Military Academy, Brno, Czechoslovakia, 1991
46. R.P. Gaida, Yu.B. Klyuchkovskii, V.I. Tretyak, Group-theoretic approach to the construction of relativistic Lagrangian mechanics of systems of particles, *Ukrainian Math. J.* 43 (1991) 1408-1413
47. M. Ferraris, M. Francaviglia, Conservation laws in general relativity, *Classical Quant. Grav.* (Suppl. 5) 9 (1992) 79-95
48. M. Ferraris, M. Francaviglia, I. Sinicco, Covariant ADM formulation applied to general relativity, *Nuovo Cimento B, General physics, relativity, astronomy and mathematical physics and methods* 107 (1992) 1303-1311
49. V.M. Filippov, V.M. Savcin, S.G. Sorokov, *Variational principles for non-potential operators*, Itogi nauki i techniky, Ser. Sovremennyye problemy matematiki (novejsije dostizenia), Moskva 1992 (Russian)
50. O. Krupkova, *Variational Analysis on Fibered Manifolds Over 1-dimensional Bases*, PhD (CSc) Dissertation, Silesian Univ., Opava, 1992
51. Nong Quoc Chinh, *Sheaves of contact forms and acyclic resolutions on finite jet prolongations of a fibred manifold* (Svazky kontaktnich forem a acyklicke rezolventy na konecných jetových prodlouženích fibrovane variety, in Czech), PhD (CSc) Dissertation, Brno (Czechoslovakia), 1992, 50 pp.
52. D. Betounes, Global shift operators and the higher order calculus of variations, *J. Geom. Phys.* 10 (1993) 185-201
53. J.F. Carinena, J. Fernandeznunez, Geometric theory of time-dependent singular lagrangians, *Fortsch. Phys.* 41 (1993) 517-552
54. O. Krupkova, On the inverse problem of the calculus of variations for ordinary differential equations, *Math. Bohemica* 118 (1993) 261-276

56. P.G. Costantini, On the geometric structure of Euler-Lagrange equations, *Ann. Mat. Pura ed Appl.* 167 (1994) 389-402
57. O. Krupkova, A geometric setting for higher-order Dirac-Bergmann theory of constraints, *J. Math. Phys.* 35 (1994) 6557-6576
58. A. Vondra, Symmetries of connections on fibered manifolds, *Arch. Math.* 30 (1994) 97-115
59. O. Krupkova, *A Geometric Theory of Variational Ordinary Differential Equations*, Assoc. Prof. Dissertation, Silesian Univ., Opava, 1995, 165 pp.
60. J. Stefanek, *A representation of the variational sequence by forms*, PhD Dissertation, Silesian Univ. Opava, December 1995
61. A. Vondra, Towards a geometry of higher order partial differential equations represented by connections on fibered manifolds, Assoc. Prof. (Doc.) Dissertation, Military Academy, Brno, Czech Republic, 1995
62. G. Giachetta and G. Sardanashvily, Energy-momentum superpotential in gravitation theory, in *Gravity, Particles and Space-time*, World Scientific, 1996, 471-506
63. O. Krupkova, Higher-order constrained systems on fibered manifolds: An exterior differential systems approach, in L. Tamassy, J. Szenthe, Eds., *New Developments in Differential Geometry*, Proc. Colloq. on Diff. Geom., Debrecen, Hungary, July 1994; Kluwer Academic Publishers, Dordrecht, 1996, 255-278
64. O. Krupkova, Symmetries and first integrals of time-dependent higher-order constrained systems, *J. Geom. Phys.* 18 (1996) 38-58
65. R. Vitolo, Bicompleksi Lagrangiani ed applicazioni alla meccanica relativistica classica e quantistica, Tesi di Dottorato in Matematica, Universita di Firenze, 1996, 175 pp.
66. M Modugno, R. Vitolo, Quantum connection and Poincare-Caeran form, in *Gravitation, electromagnetism and geometric structures*, G. Ferrarese, Ed., Pitagora, Bologna, 1996, 237-279
67. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
68. O. Krupkova, Noether theorem and first integrals of constrained lagrangean systems, *Math. Bohemica* 122 (1997) 257-265
69. G. Giachetta, L. Mangiarotti, G. Sardanashvily, *New Lagrangian and Hamiltonian Methods in Field Theory*, World Scientific, Singapore, 1997
70. L. Fatibene, M. Ferraris, M. Francaviglia, M. Godina, Gauge formalism for general relativity and fermionic matter, *Gen. Relat. Gravit.* 30 (1998) 1371-1389
71. L. Mangiarotti, G. Sardanashvily, *Gauge Mechanics*, World Scientific, Singapore, 1999
72. D.R. Grigore, Trivial second order lagrangians in classical field theory, *Fortschr. Phys.* 47 (1999) 913-936
73. R.Ya. Matsyuk, Integration by parts and vector differential forms in higher order variational calculus on fibred manifolds, *Matematychni Studii* 11 (1999), 85-105
74. M. Mraz, J. Musilova, Variational compatibility of force laws, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 553-561
75. L. Fatibene, M. Ferraris, M. Francaviglia, et al., Remarks on Noether charges and black holes entropy, *Ann. Phys.* 275 (1999) 27-53
76. O. Krupkova, Higher order mechanical systems with constraints, *J. Math. Phys.* 41 (2000) 5304-5324
77. A. Vondra, Higher-Order Differential Equations Represented by Connections on Prolongations of a Fibered Manifold, *Extracta Mathematicae* 15 (2000) 421-512
78. O. Krupkova, Differential systems in higher order mechanics, in *Proceedings of the Seminar on Differential Geometry*, D. Krupka, Ed., Silesian Univ., Opava, Czech Republic, 2000, 87-130
80. M. Francaviglia, M. Palese, Second order variations in variational sequences, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc.

- Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 119-130
81. O. Krupkova, Hamilton field theory revisited: A geometric approach to regularity, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 187-207
 82. D. Smetanova, On Hamilton p2-equations in second order field theory, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 1329-341
 83. O. Krupkova, D. Smetanova, On regularization of variational problems in first-order field theory, *Rend. Circ. Mat. Palermo, Suppl.* 66 (2001) 133-140
 84. M. Francaviglia, M. Palese, R. Vitolo, Symmetries in finite order variational sequences, *Czechoslovak Math. J.* 52 (2002) 197-213
 85. J.M. Masque, M. Eugenia Rosado Maria, Invariant variational problems on linear frame bundles, *J. Phys. A-Math. Gen.* 35 (2002) 2013-2036
 86. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
 87. O. Krupkova, Hamiltonian field theory, *J. Geom. Phys.* 43 (2002) 93-132
 88. C.T. Prieto, Variational problems defined by local data, in *Differential Geometry and its Applications*, Proc. Conf. Part 1, Opava, Czech Republic, O. Kowalski, D. Krupka, J. Slovak, Eds., Aug. 2001; *Diff. Geom. Appl.* 17, 2002, 473-483
 89. J. Sedenkova, On the invariant variational sequences in mechanics, *Rendiconti Del Circ. Mat. Palermo, Serie II, Suppl.* 71 (2003) 185-190
 90. O. Krupkova, Variational metric structures, *Publ. Math. Debrecen* 62 (2003) 461-495
 91. D. Smetanova, *The Regularity Problem in the Calculus of Variations*, PhD Dissertation, Palacky University Olomouc, Faculty of Science, 2003
 92. A. Hakova, O. Krupkova, Variational first-order partial differential equations, *J. Differential Equations* 191 (2003) 67-89
 93. R.F. Peres, J.M. Masque, First-order locally variational operators, *J. Phys. A-Math. Gen.* 36 (2003) 6523-6529
 94. O. Krupkova, Non-variational Hamiltonian structures, *Analele Stiintifice ale universitatii "Al. I. Cuza" Iasi, XLIX Matematica*, 2003, 665-285
 95. M. de Leon, D.M. de Diego, A. Santamaria-Merino, Symmetries in classical field theory, *Int. J. Geom. Methods in Modern Phys.* 6 (2004) 651-710
 96. M. Swaczyna, On nonholonomic variational principle, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 297-306
 97. V. Balan, Variational problems in the geometrized first order jet framework, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 91-98
 98. D. Smetanova, On regularization of second order Lagrangians, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 289-296
 99. J. Sedenkova, A generalization of Lepage forms in mechanics, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 281-288
 100. C.T. Prieto, Variational formulation of Chern-Simmons theory for arbitrary Lie groups, *J. Geom. Phys.* 50 (2004) 138-161
 101. O. Krupkova, P. Volny, Euler-Lagrange and Hamilton equations for non-holonomic systems in field theory, *J. Phys. A-Math. Gen.* 38 (2005) 8715-8745
 102. M. Francaviglia, M. Palese, R. Vitolo, The Hessian and Jacobi morphisms for higher-order calculus of variations, *Diff. Geom. Appl.* 22 (2005) 105-120
 103. J. Brajercik, *Higher order invariant variational principles on frame bundles*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2005, 58 pp.
 104. M. Crampin, D. Saunders, On null Lagrangians, *Diff. Geom. Appl.* (2005) 131-146
 105. T. Iwai, H. Yamaoka, Stratified reduction of classical many-body problem with

- symmetry, *J. Phys. A-Math. Gen.* 38 (2005) 2415-2439
106. O. Krupkova, Partial differential equations with differential constraints, *J. Diff. Equations* 220 (2006) 354-395
 107. M. Palese, E. Winterroth, The relation between the Jacobi morphism and the Hessian in gauge-natural field theories, *Theor. and Math. Phys.* 152 (2007) 1191-1200
 108. P. Morando, Deformations of Lie derivative and mu-symmetries, *J. Phys. A-Math. Gen.* (2007) 11547-11559
 109. O. Krupkova, Helmholtz conditions in the geometry of SODEs, in F. Cantrijn, B. Langerock, Eds., *Differential Geometric Methods in Mechanics and Field Theory*, Volume in Honour of W. Sarlet, Gent, Academia Press, 2007, 91-90
 110. P. Morando, Variational lambda symmetries and deformed Lie derivatives, in G. Gaeta, R. Vitolo, S. Walcher, Eds., *Symmetry and Perturbation Theory* (SPT 2007) Proc. Conf., Otranto, Italy, June 2-9, 2007, World Scientific, 2007, 140-147
 111. O. Krupkova, G. Prince, Lepage forms, closed 2-forms and second-order ordinary differential equations, *Russian Mathematics*, vol. 51, no. 12, pp. 1-16, 2007
 112. M. Palese, E. Winterroth, Lagrangian reductive structures on gauge-natural bundles, *Rep. Math. Phys.* 62 (2008) 229-239
 113. M. Ferraris, M. Francaviglia, M. Palese, Canonical connections in gauge-natural field theories, *Int. J. Geom. Methods in Modern Phys.* 5 (2008) 937-988
 114. J. Brajercik, $GL(n, \mathbb{R})$ -invariant variational principles on frame bundles, *Balkan J. Geom. Appl.* (2008) 11-19
 115. O. Krupkova, G.E. Prince, Second order ordinary differential equations in jet bundles and the inverse problem of the calculus of variations, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 116. R. Vitolo, Variational sequences, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 117. O. Krupkova, J. Volna, P. Volny, Constrained Lepage forms, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 527-537
 118. A. Patak, Hilbert-Yang-Mills functional: Examples, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 655-664
 119. S. Preston, Variational theory of balanced systems, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 675-688
 120. J. Musilova, M. Lenc, Lepage forms in variational theories: From Lepage's idea to the variational sequence, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 3-26
 121. A. Patak, *Geometrical Structure of Gauge Theories: Electromagnetism, Gravitation*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2008, 65 pp.
 122. O. Krupkova, Noether theorem: 90 years on, in F. Etayo, M. Fioravanti, R. Santamaria, *Geometry and Physics*, XVII Internat. Fall Workshop on Geom. and Phys., Castro Urdiales, Sept. 2008; AIP Conf. Proc. 1130, American Institute of Physics, 2009
 123. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
 124. L. Vitagliano, Secondary calculus and the covariant phase space, *J. Geom. Phys.* 59 (2009) 426-447
 125. O. Krupkova, The nonholonomic variational principle, *J. Phys. A-Math. Theoret.* 42 (2009), Article No. 185201
 126. V. Oproiu, N. Papaghiuc, Some new geometric structures of natural lift type on

- the tangent bundle, *Mull. Math. Soc. Sci. Math. Roumanie* 52 (2009) 333-346
127. M. Palese, R. Vitolo, On a class of polynomial Lagrangians, *Rend. Circ. Mat. Palermo* (2) Suppl. 66 (2010) 147-159
 128. Y. Kosmann-Schwarzbach, *The Noether Theorems*, Springer, New York, 2010
 129. O. Krupkova, D.J. Saunders, Affine duality and Lagrangian and Hamiltonian systems, *International J. of Geom. Methods in Modern Phys.* 8 (2011) 669-697
 130. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
 131. S. Preston, Forms of Lepage type and the balance systems, *Diff. Geom. Appl.* 29, Suppl. 1 (2011) 196-206
 132. M. Ferraris, M. Palese, E. Winterroth, Local variational problems and conservation laws, *Diff. Geom. Appl.* 29 (2011) S80-S85
 133. A. Patak, Hamiltonian structure of the Young-Mills functional, *Diff. Geom. Appl.* 29 (2011) S251-S254
 134. M. Palese, E. Winterroth, Variational Lie derivative and cohomology classes, *AIP Conference Proceedings* 1360, Ed.: Herdeiro, C; Picken, R (2011) 106-112
 135. M. Palese, E. Winterroth, Symmetries of Helmholtz forms and globally variational dynamical forms, *Journal of Physics: Conference Series* 343 (2012) 012129, doi:10.1088/1742-6596/343/1/012129, 1-4
 136. O. Krupkova, Nonconservative mechanical systems with nonholonomic constraints, *Science China Physics, Mechanics and Astronomy*, 55 (2012), 1475-1484
 137. M. Havelkova, Symmetries of a dynamical system represented by singular Lagrangians, *Communications in Mathematics* 20 (2012) 23-32
 138. I. Kanatchikov, De Donder – Weyl Hamiltonian formulation and precanonical quantization of vielbain gravity, *Journal of Physics Conference Series* 02/2013; 442(1). DOI: 10.1088/1742-6596/442/1/012041
 139. M. Kraus, *Variational Integrators in Plasma Physics*, PhD thesis, Max Planck Institute for Plasma Physics, 2013; arXiv:1307.5665v2 [MathNA]
 140. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6
 141. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
 142. Volna, J., Urban, Z., The interior Euler-Lagrange operator in field theory, *Math. Slovaca* 65 (2015) 1427-1444
 143. Cattafi, F., Palese, M., Winterroth, E., Variational derivatives in locally Lagrangian field theories and Noether-Bessel-Hagen currents, *Internat. J. Geom. Methods in Modern Physics* 13 (2016); DOI: 10.1142/S0219887816500675
 144. M. Palese, O. Rossi, E. Winterroth, J. Musilova, Variational sequences, representation sequences and applications in physics, *Sigma* 12 (2016) 045, 45 pp.; <http://dx.doi.org/10.3842/SIGMA.2016.045>

[2] D. Krupka, *Differential Invariants (Lecture Notes)*, Department of Algebra and Geometry, Faculty of Science, J.E. Purkyne University, Brno, 1979, 67 pp.

1. M. Ferraris, M. Francaviglia and C. Reina, A constructive approach to bundles of geometric objects on a differentiable manifold. *J. Math. Phys.* 24 (1983) 120-124
2. M. Ferraris, M. Francaviglia, C. Reina, Sur les fibres d'objets geometriques et leur applications physiques, *Ann. Inst. H. Poincare* 38 (1983) 371-383
3. J. Janyska, Natural prolongations of linear connections, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 129-132
4. A.M. Vinogradov, The C -spectral sequence, lagrangian formalism and conserva-

- tion laws. I. The linear theory, II. The nonlinear theory, *J. Math. Anal. Appl.* 100 (1984) 1-40, 41-129
5. J. Janyska, On natural operations with linear connections, *Czechoslovak Math. J.* 35 (1985) 106-115
 6. J. Janyska, Connections naturally induced from the metric tensor and its derivatives of finite order, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications, Communications*, Proc. Conf. Vol. 2, Brno, Czechoslovakia, Aug. 1986; J.E. Purkyne Univ., Brno, 1987, 143-156
 7. O. Kowalski, M. Sekizawa, Natural transformations of Riemannian metrics on manifolds to metrics on tangent bundles - a classification, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1986; Kluwer Academic Publishers, 1987, 149-178
 8. M. Sekizawa, Natural transformation of affine connections on manifolds to metrics on cotangent bundles, Proc. Conf. Srni, January 1986; Suppl. Rend. Circ. Mat. Palermo, Ser. II, No. 14 (1987) 129-142
 9. M. Sekizawa, Natural transformations of symmetric affine connections on manifolds to metrics on linear frame bundles: A classification, *Monatsh. Math.* 105 (1988) 229-243
 10. M. Sekizawa, Natural transformations of vector fields on manifolds to vector fields on tangent bundles, *Tsukuba J. Math.* 12 (1988) 115-128
 11. J. Gancarzewicz, W. Mikulski, Z. Pogoda, Natural bundles and natural liftings prolongations of geometric structures, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 281-320
 12. M.D. Calvo, G.G.R. Keilhauer, Tensor fields of type (0,2) on the tangent bundle of a Riemannian manifold, *Geometriae Dedicata* 71 (1998) 209-219
 13. O. Kowalski, M. Sekizawa, Invariance on g -natural metrics on tangent bundles, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovák, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 171-181
 14. M. Sekizawa, On Riemannian geometry of orthonormal frame bundles, *Note di Matematica* 28 (2008) 383-394
 15. O. Kowalski, M. Sekizawa, Invariance of g -natural metrics on linear frame bundles, *Arch. Math.* 44 (2008) 139-147
- [3] **D. Krupka, J. Musilova, *Calculus of Odd Base Forms on Differential Manifolds*, *Folia Fac. Sci. Nat. UJEP Brunensis* 24 (1983), 65 pp.**
1. A. Vondra, *Connections in the geometry of non-autonomous regular higher order dynamics*, PhD Dissertation, Military Academy, Brno, Czechoslovakia, 1991
 2. J. Stefanek, Odd variational sequences on finite order jet spaces, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 523-538
 3. P. Musilova, *Differential Invariants of Immersions of Manifolds with Metric Fields*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
 4. P. Musilova, J. Musilova, Differential invariants of immersions of manifolds with metric fields, *Commun. Math. Phys.* 249 (2004) 319-329
 5. P. Musilova, J. Musilova, Natural operators of smooth mappings of manifolds with metric fields, *Rep. Math. Phys.* 54 (2004) 273-283
- [4] **D. Krupka, *Natural Lagrangian structures*, in *Differential Geometry*, Banach Center Publications 12, Diff. Geom. Semester, Warsaw, Sept.-Dec. 1979; Polish Scientific Publishers, Warsaw, 1984, 185-210**

1. M. Horak, *On geometry of the Lagrange and Hamilton formalism of higher order*, PhD (CSc)-Dissertation in Czech, Faculty of Mathematics and Physics, Charles University, Prague, 1982
2. M. Ferraris, M. Francaviglia, On the globalization of Lagrangian and Hamiltonian formalisms in higher order mechanics, in S. Benenti, M. Francaviglia, A. Lichnerowicz, Eds., *Modern Developments in Analytical Mechanics*, Proc. IUTAM-ISIMM Sympos., Turin, June 1982; Academy of Sciences of Turin, 1983, 109-125
3. M. Ferraris, M. Francaviglia, On the global structure of Lagrangian and Hamiltonian formalism in higher order calculus of variations, in Proc. Internat. Meeting "Geometry and Physics", Florence, 1982; Pitagora Editrice Bologna 1983, 43-70
4. M. Ferraris, M. Francaviglia, Global formalism in higher order calculus of variations, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 93-118
5. A.M. Vinogradov, The C -spectral sequence, lagrangian formalism and conservation laws. I. The linear theory, II. The nonlinear theory, *J. Math. Anal. Appl.* 100 (1984) 1-40, 41-129
6. M. Ferraris, M. Francaviglia, C. Reina, Sur les fibres d'objets geometriques et leur applications physiques, *Ann. Inst. H. Poincare* 38 (1983) 371-383
7. M. Horak, I. Kolar, On the higher order Poincare-Cartan forms, *Czechoslovak Math. J.* 33 (1983) 467-475
8. P. Kobak, The structure of tensor and first order natural differential operators, *Arch. Math.* 28 (1992), 121-138
9. J. Novotny, Identities connected with the second theorem of E. Noether in generally invariant gravitational theories, in J. Janyska, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1989; World Scientific, Singapore, 1990, 383-388
10. I. Kolar, P.W. Michor, J. Slovák, *Natural Operations in Differential Geometry*, Springer, Berlin-Heidelberg-New York, 1993
11. J. Janyska, Natural quantum Lagrangians in Galilei quantum mechanics, *Rendiconti di Matematica*, VII, Roma, 1995, 1120-7183
12. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
13. P. Musilova, *Differential Invariants of Immersions of Manifolds with Metric Fields*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
14. P. Musilova, J. Musilova, Differential invariants of immersions of manifolds with metric fields, *Commun. Math. Phys.* 249 (2004) 319-329
15. P. Musilova, J. Musilova, Natural operators of smooth mappings of manifolds with metric fields, *Rep. Math. Phys.* 54 (2004) 273-283
16. J. Brajercik, $GL(n, \mathbb{R})$ -invariant variational principles on frame bundles, *Balkan J. Geom. Appl.* 13 (2008) 11-19
17. J. Musilova, M. Lenc, Lepage forms in variational theories: From Lepage's idea to the variational sequence, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 3-26
18. J. Janyska, Natural Lagrangian structures, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166
19. J. Brajercik and M. Demko, Second-order natural Lagrangians on coframe bundles, *Miskolc Mathematical Notes* 14 (2013) 487-494
20. N. Voicu, Source forms and their variational completions, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6

[5] **D. Krupka**, *Lectures on Variational Sequences*, Open Ed. & Sci., Opava,

Czech Republic, 1995, 94 pp.

1. J. Stefanek, *A representation of the variational sequence by forms*, PhD Dissertation, Silesian Univ., Opava, December 1995
2. J. Musilova, Variational sequence in higher order mechanics, in J. Janyska, I. Kolar, J. Slovak, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, 1995, Masaryk Univ., Brno, 1996, 611-624
3. J. Stefanek, A representation of the variational sequence in higher order mechanics, in J. Janyska, I. Kolar, J. Slovak, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, 1995, Masaryk Univ., Brno, 1996, 487-494
4. R. Vitolo, Bicomplexi Lagrangiani ed applicazioni alla meccanica relativistica classica e quantistica, Tesi di Dottorato in Matematica, Universita di Firenze, 1996, 175 pp.
5. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
6. O. Krupkova, Mechanical systems with nonholonomic constraints, *J. Math. Phys.* 38 (1997) 5098-5126
7. J. Kasparova, A representation of the 1st order variational sequence in field theory, *Differential Geometry and Applications*, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 493-502
8. J. Musilova, M. Krbek. A note to the representation of the variational sequence in mechanics, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 511-523
9. R. Vitolo, Finite order variational bicomplexes, *Math. Proc. Cambridge Phil. Soc.* 125 (1999) 321-333
10. O. Krupkova, Higher order mechanical systems with constraints, *J. Math. Phys.* 41 (2000) 5304-5324
11. O. Krupkova, Differential systems in higher order mechanics, in *Proceedings of the Seminar on Differential Geometry*, D. Krupka, Ed., Silesian Univ., Opava, Czech Republic, 2000, 87-130
12. M. Krbek, J. Musilova, J. Kasparova, Representation of the variational sequence in field theory, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 147-160
13. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
14. Z. Urban, Variational classes and mappings in the second order variational sequence: Explicit formulas *Kvaternion* 2 (2013) 69-81

[6] D. Krupka and M. Krupka, *Jets and Contact Elements*, in D. Krupka, Ed., *Proceedings of the Seminar on Differential Geometry*, Silesian Univ., Opava, Czech Republic, 2000, 39-85

1. M. Kures, Local approach to higher-order contact elements, *Rep. Math. Phys.* 58 (2006) 395-410
2. J. Brajercik, $GL(n, \mathbb{R})$ -invariant variational principles on frame bundles, *Balkan J. Geom. Appl.* 13 (2008) 11-19
3. Pit-Mann Wong, The Oka-Grauert-Gromov principle for holomorphic bundles, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
4. A. Patak, *Geometrical Structure of Gauge Theories: Electromagnetism, Gravitation*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2008, 65 pp.

5. J. Brajercik, *Higher order invariant variational principles on frame bundles*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2005, 58 pp.
 6. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
 7. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170.
- [7] **D. Krupka**, *Global variational principles: Foundations and current problems*, in **K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds.**, *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 3-18
1. B. Kruglikov, V. Lychagin, Geometry of differential equations, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 2. O. Krupkova, G.E. Prince, Second order ordinary differential equations in jet bundles and the inverse problem of the calculus of variations, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 3. O. Krupkova, Helmholtz conditions in the geometry of SODEs, in F. Cantrijn, B. Langerock, Eds., *Differential Geometric Methods in Mechanics and Field Theory*, Volume in Honour of W. Sarlet, Gent, Academia Press, 2007, 91-90
 4. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
 5. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
 6. O. Krupkova, G. Prince, Lepage forms, closed 2-forms and second-order ordinary differential equations, *Russian Mathematics*, vol. 51, no. 12, pp. 1-16, 2007
 7. M. Palese, O. Rossi, E. Winterroth, J. Musilova, Variational sequences, representation sequences and applications in physics, *Sigma* 12 (2016) 045, 45 pp. <http://dx.doi.org/10.3842/SIGMA.2016.045>
- [8] **D. Krupka**, *Global variational theory in fibred spaces*, in **D. Krupka, D. Saunders, Eds.**, *Handbook of Global Analysis*, Elsevier, 2008, 773-836
1. O. Krupkova, Helmholtz conditions in the geometry of SODEs, in F. Cantrijn, B. Langerock, Eds., *Differential Geometric Methods in Mechanics and Field Theory*, Volume in Honour of W. Sarlet, Gent, Academia Press, 2007, 91-90
 2. O. Krupkova, G.E. Prince, Second order ordinary differential equations in jet bundles and the inverse problem of the calculus of variations, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 3. D.J. Saunders, Jet manifolds and natural bundles, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 4. R. Vitolo, Variational sequences, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 5. O. Krupkova, J. Volna, P. Volny, Constrained Lepage forms, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 527-537
 6. J. Musilova, M. Lenc, Lepage forms in variational theories: From Lepage's idea to the variational sequence, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 3-26
 7. O. Krupkova, Lepage forms in the calculus of variations, in O. Krupkova,

- D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 27-55
8. A. Patak, *Geometrical Structure of Gauge Theories: Electromagnetism, Gravitation*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2008, 65 pp.
 9. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
 10. M. Crampin, D.J. Saunders, Homotopy operators for the variational bicomplex, representations of the Euler-Lagrange complex, and the Helmholtz-Sonin conditions, *Lobachevskii J. Math.* 30 (2009) 107-123
 11. O. Krupkova, D. Smetanova, Lepage equivalents of second-order Euler- Lagrange forms and the inverse problem of the calculus of variations, *J. Nonlinear Math. Phys.* 16 (2009) 235-250
 12. O. Krupkova, The nonholonomic variational principle, *J. Phys. A-Math. Theoret.* 42 (2009), Article No. 185201
 13. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
 14. G. Giachetta, L. Mangiarotti, G. Sardanashvily, *Advanced Classical Field Theory*, World Scientific, 2009
 15. A.Patak, Hamiltonian structure of the Young-Mills functional, *Diff. Geom. Appl.* 29 (2011) S251-S254
 16. M. Francaviglia, M. Palese and E. Winterroth, Cohomological obstructions in locally variational field theories, in XXIst International Conference on Integrable Systems and Quantum Symmetries, *Journal of Physics, Conference Series* 474 (2013) 012017, doi:10.1088/1742-6596/474/1/012017
 17. Marcella Palese, Ekkehart Winterroth, Generalized symmetries generating Noether currents and canonical conserved quantities, *Journal of Physics Conference Series* 11/2014; 563(1):012023; DOI:10.1088/1742-6596/563/1/012023
 18. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
 19. Volna, J., Urban, Z., The interior Euler-Lagrange operator in field theory, *Math. Slovaca* 65 (2015) 1427-1444
 20. M. Palese, E. Winterroth, Topological obstructions in Lagrangian field theories, with application to 3D Chern-Simons gauge theory, *Journal of Mathematical Physics* 58 (2), August 2016; DOI: 10.1063/1.4975336
 21. Cattafi, F., Palese, M., Winterroth, E., Variational derivatives in locally Lagrangian field theories and Noether-Bessel-Hagen currents, *Internat. J. Geom. Methods in Modern Physics* 13 (2016), DOI: 10.1142/S0219887816500675
 22. M. Palese, O. Rossi, E. Winterroth, J. Musilova, Variational sequences, representation sequences and applications in physics, *Sigma* 12 (2016) 045, 45 pp. <http://dx.doi.org/10.3842/SIGMA.2016.045>
 23. M. Palese, E. Winterroth, Topological obstructions in Lagrangian field theories, with application to 3D Chern-Simons gauge theory, *Journal of Mathematical Physics* 58 (2), August 2016; DOI: 10.1063/1.4975336
- [9] **A.M. Bloch, D. Krupka and D.V. Zenkov, *Helmholtz conditions and the method of controlled Lagrangians*, in *The Inverse Problem of the Calculus of Variations, Local and Global Theory*, In D.V. Zenkov, Editor, Atlantis Press, 2015, 1-29.**
1. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6

Papers

[1] D. Krupka, Lagrange theory in fibered manifolds, Rep. Math. Phys. 2 (1971) 121-133

1. A. Trautman, Invariance of Lagrangian systems, Papers in honor of J.L. Synge, Clarendon Press, Oxford, 1972, 86-99
2. J. Novotny, *Modern Methods of Differential Geometry and the Conservation Laws Problem*, Folia Fac. Sci. Nat. UJEP Brunensis, Physica 14, Brno, Czechoslovakia, 1974
3. I. Kolar, On the Hamilton formalism in fibered manifolds, Scripta Fac. Sci. Nat. UJEP Brunensis, Physica 3-4 (1975) 249-254
4. B. Kupershmidt, The Lagrangian formalism in the calculus of variations, Funct. Analiz i prilozhenia 10 (1976) 77-78 (Russian)
5. A. Dekret, On a horizontal structure on differentiable manifolds, Math. Slovaca 27 (1977) 25-32
6. B. Kupershmidt, Geometry of jet bundles and the structure of Lagrangian and Hamiltonian formalisms, Lecture Notes in Math. 775 (1980) 162-218
7. I. Kolar, Connections in 2-fibered manifolds, Arch. Math. 1 (1981) 23-30
8. M. de Leon, P.R. Rodrigues, *Generalized Classical Mechanics and Field Theory*, North-Holland Math. Studies 112, North-Holland, Amsterdam-New York-Oxford, 1985
9. C. Günther, The polysymplectic Hamiltonian formalism in field theory and calculus of variations I: The local case, J. Diff. Geom. 25 (1987) 25-53
10. P.G. Henriques, Calculus of variations in the context of exterior differential forms, Diff. Geom. Appl. 3 (1993) 331-372
11. G. Giachetta, L. Mangiarotti, Constrained Hamiltonian systems and gauge theories, Internat. J. Theoret. Phys. 34 (1995) 2353-2371
12. M. Godina, P. Matteucci, J.A. Vickers, Metric-affine gravity and the Nester-Witten 2-form, J. Geom. Phys. 39 (2001) 265-275
13. V. Balan, Variational problems in the geometrized first order jet framework, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 91-98
14. Y. Kosmann-Schwarzbach, *The Noether Theorems*, Springer, New York, 2010
15. P.G. Henriques, The inverse problem of the variational calculus with non-holonomic constraints, Sao Paulo Journal of Math. Sciences 6 (2012) 335-350

[2] D. Krupka, On the structure of the Euler mapping, Arch. Math. 10 (1974) 55-61

1. P. Dedecker, On applications of homological algebra to calculus of variations and mathematical physics, in Proc. IV. Coll. Internat. de Geometria Diff., Santiago de Compostella, 1978, 1-12
2. V.L. Bezdishevskij, Variacionnyje principy mehaniki sploshnoj sredy, Nauka, Moscow, 1983
3. M. Ferraris, M. Francaviglia, On the global structure of Lagrangian and Hamiltonian formalism in higher order calculus of variations, in Proc. Internat. Meeting "Geometry and Physics", Florence, 1982; Pitagora Editrice Bologna 1983, 43-70
4. M. Ferraris, M. Francaviglia, Global formalism in higher order calculus of variations, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 93-118
5. A.M. Vinogradov, The C -spectral sequence, lagrangian formalism and conservation laws. I. The linear theory, II. The nonlinear theory, J. Math. Anal. Appl. 100 (1984) 1-40, 41-129

6. M. Ferraris, M. Francaviglia, Energy-momentum tensors and stress tensors in geometric field theories, *J. Math. Phys.* 26 (1985) 1243-1252
 7. M. de Leon, P.R. Rodrigues, *Generalized Classical Mechanics and Field Theory*, North-Holland Math. Studies 112, North-Holland, Amsterdam-New York-Oxford, 1985
 8. V.M. Filippov, V.M. Savcin, S.G. Sorokov, *Variational principles for non-potential operators*, Itogi nauki i techniky, Ser. Sovremennyye problemy matematiki (novejsije dostizhenia), Moskva 1992 (Russian)
 9. M. Castrillon-Lopez, Gauge invariant variationally trivial U(1)-problems, *Differential Geometry and Applications*, I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 461-468
 10. D.R. Grigore, Variationally trivial lagrangians and locally variational differential equations of arbitrary order, *Diff. Geom. Appl.* 10 (1999) 79-105
 11. M. Castrillon-Lopez, J.M. Masque, T.S. Ratiu, Trivial lagrangians on connections and invariance under automorphisms, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 77-83
 12. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
 13. M.C. Lopez, J.M. Masque, T. Ratiu, Gauge invariance and variational trivial problems on the bundle of connections, *Diff. Geom. Appl.* 19 (2003) 127-145
 14. M.C. Lopez, J.M. Masque, A report on gauge invariant forms and variational problems on the bundle of connections of a principal U(1)-bundle and the associated vector bundles, *Internat. J. Geom. Methods in Modern Phys.* 1 (2004) 367-404
 15. G. Moreno, The geometry of the space of Cauchy data of linear PDEs, *Central European J. Math.* 11 (2013) 1960-1981
 16. G. Moreno, M.E. Stypa, Natural boundary conditions in geometric calculus of variations, *Math. Slovaca* 65 (2015), DOI: <https://doi.org/10.1515/ms-2015-0105>
 17. G. Moreno, M.E. Stypa, Geometry of the free-sliding Bernoulli beam, *Commun. in Math.* 24 (2016) 153-171
- [3] **D. Krupka, On generalized invariant transformations, Rep. Math. Phys. 5 (1974) 353-358**
1. V. Aldaya, I.A. de Azcarraga, Variational principles on r th order jets of fibre bundles in field theory, *J. Math. Phys.* 19 (1978) 1969-1975
 2. M. Ferraris, M. Francaviglia, Energy-momentum tensors and stress tensors in geometric field theories, *J. Math. Phys.* 26 (1985) 1243-1252
 3. M. de Leon, P.R. Rodrigues, *Generalized Classical Mechanics and Field Theory*, North-Holland Math. Studies 112, North-Holland, Amsterdam-New York-Oxford, 1985
 4. M. Castrillon-Lopez, Gauge invariant variationally trivial U(1)-problems, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 461-468
 5. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
- [4] **D. Krupka, A. Trautman, General invariance of Lagrangian structures, Bull. Acad. Polon. Sci., Ser. Sci. Math. Astronom. Phys. 22 (1974) 207-211**
1. A. Trautman, A classification of space-time structures, *Rep. Math. Phys.* 10

- (1976) 297-310
2. R. Abraham, J. Marsden, *Foundations of Mechanics*, 2nd edition, Benjamin-Wesley, New York, 1978
 3. V. Aldaya, I.A. de Azcarraga, Variational principles on r th order jets of fibre bundles in field theory, *J. Math. Phys.* 19 (1978) 1969-1975
 4. J. Novotny, On the generally invariant lagrangians for the metric field and other tensor fields, *Internat. J. Theoret. Phys.* 17 (1978) 677-684
 5. I. Kolar, Structure morphisms of prolongation functors, *Math. Slovaca* 30 (1980) 83-93
 6. M. Ferraris, M. Francaviglia, C. Reina, Sur les fibres d'objets geometriques et leur applications physiques, *Ann. Inst. H. Poincare* 38 (1983) 371-383
 7. A. Trautman, *Differential Geometry for Physicists*, Stony Brook Lectures, Bibliopolis, 1984
 8. D. Canarutto, M. Modugno, Ehresmann's connections and the geometry of energy tensors in Lagrangian field theories, *Tensor, N. S.* 42, No. 2 (1985) 112-120
 9. M. Ferraris, M. Francaviglia, Energy-momentum tensors and stress tensors in geometric field theories, *J. Math. Phys.* 26 (1985) 1243-1252
 10. M. de Leon, P.R. Rodrigues, *Generalized Classical Mechanics and Field Theory*, North-Holland Math. Studies 112, North-Holland, Amsterdam-New York-Oxford, 1985
 11. J. Novotny, On the generally invariant theories of gravitation, in J. Szenthe, L. Tamassy, *Topics in Differential Geometry*, Coll. Math. J. Bolyai, 46, Proc. Conf., Debrecen, Hungary, 1984; North Holland, 1988, 959-971
 12. J. Novotny, *O kanonickem a symetrickem tenzoru energie-impulzu v relativistickyh teoriich*, Assoc. Prof. (Doc.) Dissertation, Faculty of Science, J.E. Purkyne University, Brno, 1990
 13. J. Gancarzewicz, W. Mikulski, Z. Pogoda, Natural bundles and natural liftings prolongations of geometric structures, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 281-320
 14. I. Kolar, P.W. Michor, J. Slovák, *Natural Operations in Differential Geometry*, Springer, Berlin-Heidelberg-New York, 1993
 15. M. Francaviglia, M. Palese, Second order variations in variational sequences, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen, June 2000; Debrecen Univ., Debrecen, 2001, 119-130
 16. I. Kolar, *Natural bundles and operators* (Russian), in *Itogi Nauki i Tekhniki*, Ser. Probl. Geom. 23, VINITI, Moscow, 1991, 67-98
 17. M. Francaviglia, M. Palese, R. Vitolo, Symmetries in finite order variational sequences, *Czechoslovak Math. J.* 52 (2002) 197-213
 18. J. Janyska, Natural Lagrangian structures, in O. Krupkova, D. Saunders, Eds. *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166
 19. Y. Kosmann-Schwarzbach, *The Noether Theorems*, Springer, New York, 2010
 20. M. Palese, O. Rossi, E. Winterroth, J. Musilova, Variational sequences, representation sequences and applications in physics, *Sigma* 12 (2016) 045, 45 pp.
<http://dx.doi.org/10.3842/SIGMA.2016.045>

[5] D. Krupka, A setting for generally invariant Lagrangian structures in tensor bundles, *Bull. Acad. Polon. Sci. Ser. Sci. Math. Astronom. Phys.* 22 (1974) 967-972

1. J. Novotny, On the generally invariant lagrangians for the metric field and other tensor fields, *Internat. J. Theoret. Phys.* 17 (1978) 677-684
2. J. Janyska, On natural operations with linear connections, *Czechoslovak Math. J.* 35 (1985) 106-115

3. I. Kolar, On the natural operators on vector fields, *Ann. Global Anal. Geom.* 6 (1988), 109-117
4. Dao Qui Chau, *2nd Order Differential Invariants on the Bundle of Frames*, PhD dissertation, Masaryk University, Brno, 1991, 57 pp.
5. L. Fatibene, M. Francaviglia, M. Palese, Conservation laws and variational sequences in gauge-natural theories, *Math. Proc. Cambridge* 130 (2001) 555- 569
6. J. Janyska, Natural Lagrangian structures, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166

[6] D. Krupka, Lagrangians and topology, Scripta Fac. Sci. Nat. UJEP Brunensis, Physica 3-4 (1975) 265-270

1. O. Krupkova, The local inverse problem of the calculus of variations in higher order Hamiltonian mechanics, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 275-287

[7] D. Krupka, A geometric theory of ordinary first order variational problems in fibered manifolds, I. Critical sections, J. Math. Anal. Appl. 49 (1975) 180-206

1. I. Kolar, On the Hamilton formalism in fibered manifolds, *Scripta Fac. Sci. Nat. UJEP Brunensis, Physica 3-4 (1975) 249-254*
2. I. Kolar, Fundamental vector fields on associated fiber bundles, *Cas. pest. mat.* 102 (1977) 419-425
3. I. Kolar, On the Euler-Lagrange differential in fibered manifolds, *Rep. Math. Phys.* 12 (1977) 301-305
4. P.R. Rodrigues, On generating forms of k -generalized Lagrangian and Hamiltonian systems, *J. Math. Phys.* 18 (1977) 1720-1723
5. V. Aldaya, I.A. de Azcarraga, Variational principles on r th order jets of fibre bundles in field theory, *J. Math. Phys.* 19 (1978) 1969-1975
6. V. Aldaya, I.A. de Azcarraga, *Geometric formulation of classical mechanics and field theory*, *Lei Rivista del Nuovo Cimento* 10 (1980)
7. I. Kolar, Structure morphisms of prolongation functors, *Math. Slovaca* 30 (1980) 83-93
8. J. Chrastina, Another approach to the classical calculus of variations, *Arch. Math.* 18 (1982) 205-218
9. J. Chrastina, On a general problem of the classical calculus of variations, in O. Kowalski, Ed., *Differential Geometry and its Applications*, Proc. Conf., N. Mesto na Morave, Czechoslovakia, Sept. 1980; Charles University, Prague, 1982, 228-231
10. I. Kolar, Lie derivatives and higher order lagrangians, in O. Kowalski, Ed., *Differential Geometry and its Applications*, Proc. Conf., N. Mesto na Morave, Czechoslovakia, Sept. 1980; Charles University, Prague, 1982, 117-123
11. M. Horak, *On geometry of the Lagrange and Hamilton formalism of higher order*, PhD (CSc)-Dissertation, in Czech, Faculty of Mathematics and Physics, Charles University, Prague, 1982
12. M. Ferraris, M. Francaviglia, C. Reina, Sur les fibres d'objets geometriques et leur applications physiques, *Ann. Inst. H. Poincare* 38 (1983) 371-383
13. L. Mangiarotti, M. Modugno, New operators on jet spaces, *Ann. Fac. Sci. Univ. Paul Sabatier de Toulouse* 5 (1983) 171-198
14. W.H. Steeb, W. Oevel, On the Lie-Backlund vector fields of a system of diffusion equations, *Phys. Scripta* 20 (1984) 513-515

15. A.M. Vinogradov, The C -spectral sequence, lagrangian formalism and conservation laws. I. The linear theory, II. The nonlinear theory, *J. Math. Anal. Appl.* 100 (1984) 1-40, 41-129
16. M. Ferraris, M. Francaviglia, Energy-momentum tensors and stress tensors in geometric field theories, *J. Math. Phys.* 26 (1985) 1243-1252
17. Y. Kossmann-Schwarzbach, On the momentum mapping in field theory, *Lecture Notes in Math.* 1139, 1985, 25-73
18. M. de Leon, P.R. Rodrigues, *Generalized Classical Mechanics and Field Theory*, North-Holland Math. Studies 112, North-Holland, Amsterdam-New York-Oxford, 1985
19. Z. Oziewicz, Classical mechanics: Inverse problem and symmetries, *Rep. Math. Phys.* 22 (1985) 91-111
20. C. Günther, The polysymplectic Hamiltonian formalism in field theory and calculus of variations I: The local case, *J. Diff. Geom.* 25 (1987) 23-53
21. I. Kolar, J. Slovák, Prolongations of vector fields to jet bundles, *Proc. Conf. on Geom. And Phys.*, Srmi; *Rend. del. Circ. Mat. di Palermo, Ser. II*, 21 (1989) 223-233
22. R.P. Gaida, Yu.B. Klyuchkovski, V.I. Tretyak, Group-theoretical approach to the construction of relativistic Lagrangian mechanics of systems of particles, *Ukrainian Mathematical Journal* 43 (1991) 1408-1413
23. V.M. Filippov, V.M. Savchin, S.G. Shorokhov, *Variational principles for non-potential operators*, *Itogi Nauki i Tekhniki, Ser. Sovrem. Probl. Mat. Nov. Dostizh.*, 40, VINITI, Moscow, 1992, 3-176 (Russian)
24. O. Krupkova, *Variational Analysis on Fibered Manifolds Over 1-dimensional Bases*, PhD (CSc) Dissertation, Silesian Univ., Opava, 1992
25. O. Zakharov, Hamiltonian formalism for nonregular Lagrangian theories in fibered manifolds, *J. Math. Phys.* 33 (1992) 607-611
26. G. Sardanashvily, O. Zakharov, The multimomentum hamiltonian formalism in gauge theory, *Internat. J. Theoret. Phys.* 31 (1992), 1477-1504
27. G. Sardanashvily, O. Zakharov, *Gauge Gravitation Theory*, World Scientific, 1992
28. P.G. Henriques, Calculus of variations in the context of exterior differential forms, *Diff. Geom. Appl.* 3 (1993) 331-372
29. I. Kolar, Natural operators related with the variational calculus, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 461-472
30. G.A. Sardanashvily, *Gauge Theory in Jet Manifolds*, Hadronic Press, 1993
31. G.A. Sardanashvily, O. Zakharov, On application of the Hamilton formalism in fibred manifolds to field theory, *Diff. Geom. Appl.* 3 (1993) 245-263
32. G. Sardanashvily, Constraint field systems in multimomentum canonical variables, *J. Math. Phys.* 35 (1994) 6584-6603
33. V.M. Filippov, V.M. Savchin, S.G. Shorokhov, *Variational principles for non-potential operators*, *J. Math. Sciences* 68, Springer New York (1994) 275-398
34. O. Krupkova, *A Geometric Theory of Variational Ordinary Differential Equations*, Assoc. Prof. Dissertation, Silesian Univ., Opava, 1995, 165 pp.
35. G. Sardanashvily, *Generalized Hamiltonian Formalism for Field Theory*, World Scientific, Singapore, 1995
36. J. Stefanek, *A representation of the variational sequence by forms*, PhD thesis, Silesian University at Opava, Czech Republic, 1995, 36 pp.
37. M. Giaquinta, S. Hildebrand, *Calculus of Variations I*, Springer, Berlin, 1996
38. M. Giaquinta, S. Hildebrand, *Calculus of Variations II*, Springer, Berlin, 1996
39. L. Klapka, Poisson manifolds of geodesic arcs, in J. Janyska, I. Kolar, J. Slovák, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, 1995; Masaryk Univ., Brno, 1996, 603-610
40. O. Krupkova, A new look at Dirac's theory of constrained systems, in *Gravity, Particles and Space-time*, World Scientific, 1996, 507-517

41. O. Krupkova, Symmetries and first integrals of time-dependent higher-order constrained systems, *J. Geom. Phys.* 18 (1996) 38-58
42. D.R. Grigore, On an order reduction theorem in the Lagrangian formalism, *Nuovo Cim., Fisica B - General physics, relativity, astronomy and mathematical physics and methods*, 111 (1996) 1439-1447
43. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
44. O. Krupkova, Noether theorem and first integrals of constrained lagrangean systems, *Math. Bohemica* 122 (1977) 257-265
45. D.R. Grigore, O.T. Popp, On the Lagrange-Souriau form in classical field theory, *Math. Bohemica* 123 (1998) 73-86
46. R.J. Alonso, Decomposition of higher order tangent fields and calculus of variations, I. Kolar, O. Kowalski, D. Krupka, J. Slovák, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 451-460
47. D.R. Grigore, The variational sequence on finite jet bundle extensions and the Lagrangian formalism, *Diff. Geom. Appl.* 10 (1999) 43-77
48. D.R. Grigore, Trivial second order lagrangians in classical field theory, *Fortschr. Phys.* 47 (1999) 913-936
49. D.R. Grigore, Variationally trivial lagrangians and locally variational differential equations of arbitrary order, *Diff. Geom. Appl.* 10 (1999) 79-105
50. R.J.A. Blanco, D-modules, contact valued calculus and Poincare-Cartan form, *Czechoslovak Math. J.* (1999) 585-606
51. A. Prastaro, Cobordism groups in PDE's, *Acta Appl. Math.* 59 (1999) 111-201
52. O. Krupkova, Differential systems in higher order mechanics, in *Proceedings of the Seminar on Differential Geometry*, D. Krupka, Ed., Silesian Univ., Opava, Czech Republic, 2000, 87-130
53. M. Krbek, J. Musilova, J. Kasparova, Representation of the variational sequence in field theory, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 147-160
54. O. Krupkova, Hamilton field theory revisited: A geometric approach to regularity, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 187-207
55. O. Krupkova, D. Smetanova, Legendre transformation for regularizable Lagrangians in field theory, *Lett. Math. Phys.* 58 (2001) 189-204
56. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
57. O. Krupkova, Hamiltonian field theory, *J. Geom. Phys.* 43 (2002) 93-132
58. W. Bottger, H. Wissowski, H.A. Kastrup, Constructing solutions of Hamilton-Jacobi equations for 2D fields with one component by means of Backlund transformations, *J. Math. Phys.* 44 (2003) 263-301.
59. P. L. Garcia, C. Rodrigo, The momentum map in vaconomic mechanics, *Proceedings of the XII Fall Workshop on Geometry and Physics*, Coimbra, 2003, *Publicaciones de la RSME*, vol. 7, pp. 111-123.
60. V. Balan, Variational problems in the geometrized first order jet framework, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 91-98
61. O. Krupkova, The geometry of variational equations, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 19-38
62. O. Krupkova, Partial differential equations with differential constraints, *J. Diff. Equations* 220 (2006) 354-395
63. P.L. Garcia, A. Garcia, C. Rodrigo, Cartan forms for first order constrained variational problems, *J. Geom. Phys.* 56 (2006) 571-610
64. O. Krupkova, G.E. Prince, Second order ordinary differential equations in jet bun-

- dles and the inverse problem of the calculus of variations, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
65. O. Krupkova, Lepage forms in the calculus of variations, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 27-55
 66. A. Fernandes, P.L. Garcia, Lepage congruences in discrete mechanics, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 85-97
 67. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
 68. Y. Kosmann-Schwarzbach, *The Noether Theorems*, Springer, New York, 2010
 69. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
 70. P.G. Henriques, The inverse problem of the variational calculus with non-holonomic constraints, *Sao Paulo Journal of Math. Sciences* 6 (2012) 335-350
 71. Denys Dutykh, Didier Clamond, Marx Chhay, Serre-type equations in deep water, <https://hal.archives-ouvertes.fr/hal-01340379/document>, 2016
 72. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6

[8] D. Krupka, A geometric theory of ordinary first order variational problems in fibered manifolds, II. Invariance, J. Math. Anal. Appl. 49 (1975) 469-476

1. I. Kolar, On the Hamilton formalism in fibered manifolds, *Scripta Fac. Sci. Nat. UJEP Brunensis, Physica* 3-4 (1975) 249-254
2. P.R. Rodrigues, On generating forms of k -generalized Lagrangian and Hamiltonian systems, *J. Math. Phys.* 18 (1977) 1720-1723
3. V. Aldaya, I.A. de Azcarraga, Variational principles on r th order jets of fibre bundles in field theory, *J. Math. Phys.* 19 (1978) 1869-1875
4. V. Aldaya, I.A. de Azcarraga, *Geometric formulation of classical mechanics and field theory*, *Lei Rivista del Nuovo Cimento* 10 (1980)
5. J. Chrastina, Another approach to the classical calculus of variations, *Arch. Math.* 18 (1982) 205-218
6. J. Chrastina, On a general problem of the classical calculus of variations, in O. Kowalski, Ed., *Differential Geometry and its Applications*, Proc. Conf., N. Mesto na Morave, Czechoslovakia, Sept. 1980; Charles University, Prague, 1982, 228-231
7. M. Horak, *On geometry of the Lagrange and Hamilton formalism of higher order*, PhD (CSc)-Dissertation, in Czech, Faculty of Mathematics and Physics, Charles University, Prague, 1982
8. M. Ferraris, M. Francaviglia, Energy-momentum tensors and stress tensors in geometric field theories, *J. Math. Phys.* 26 (1985) 1243-1252
9. Y. Kossmann-Schwarzbach, On the momentum mapping in field theory, *Lecture Notes in Math.* 1139, 1985, 25-73
10. M. de Leon, P.R. Rodrigues, *Generalized Classical Mechanics and Field Theory*, North-Holland Math. Studies 112, North-Holland, Amsterdam-New York-Oxford, 1985
11. M. Stefanova, O. Stepankova, Variationality and invariance of systems of partial differential equations, *Scripta Fac. Sci. Nat. UJEP Brunensis (Physica)* 5 (1985) 283-288
12. O. Krupkova, *Variational Analysis on Fibered Manifolds Over 1-dimensional Bases*, PhD (CSc) Dissertation, Silesian Univ., Opava, 1992
13. P.G. Henriques, Calculus of variations in the context of exterior differential forms,

- Diff. Geom. Appl. 3 (1993) 331-372
14. M. Giaquinta, S. Hildebrand, *Calculus of Variations I*, Springer, Berlin, 1996
 15. M. Giaquinta, S. Hildebrand, *Calculus of Variations II*, Springer, Berlin, 1996
 16. O. Krupkova, Symmetries and first integrals of time-dependent higher-order constrained systems, *J. Geom. Phys.* 18 (1996) 38-58
 17. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
 18. O. Krupkova, Noether theorem and first integrals of constrained lagrangean systems, *Math. Bohemica* 122 (1997) 257-265
 19. O. Krupkova, Differential systems in higher order mechanics, in D. Krupka, Ed., *Proceedings of the Seminar on Differential Geometry*, Silesian Univ., Opava, Czech Republic, 2000, 87-130
 20. O. Krupkova, Hamilton field theory revisited: A geometric approach to regularity, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 187-207
 21. O. Krupkova, Hamiltonian field theory, *J. Geom. Phys.* 43 (2002) 93-132
 22. P. L. Garcia, C. Rodrigo, The momentum map in vaconomic mechanics, *Proceedings of the XII Fall Workshop on Geometry and Physics*, Coimbra, 2003, Publicaciones de la RSME, vol. 7, pp. 111-123.
 23. J. Brajercik, *Higher order invariant variational principles on frame bundles*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2005, 58 pp.
 24. J. Brajercik, $GL(n, \mathbb{R})$ -invariant variational principles on frame bundles, *Balkan J. Geom. Appl.* 13 (2008) 11-19
 25. O. Krupkova, G.E. Prince, Second order ordinary differential equations in jet bundles and the inverse problem of the calculus of variations, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 26. O. Krupkova, Lepage forms in the calculus of variations, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 27-55
 27. A. Fernandes, P.L. Garcia, Lepage congruences in discrete mechanics, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 85-97
 28. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
 29. Y. Kosmann-Schwarzbach, *The Noether Theorems*, Springer, New York, 2010
 30. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
 31. J. Brajercik, Euler-Poincare reduction on frame bundles, *Diff. Geom. Appl.* 29, Suppl. 1, 33-40
 32. P.G. Henriques, The inverse problem of the variational calculus with non-holonomic constraints, *Sao Paulo Journal of Math. Sciences* 6 (2012) 335-350
 33. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170.
 34. Denys Dutykh, Didier Clamond, Marx Chhay, Serre-type equations in deep water, <https://hal.archives-ouvertes.fr/hal-01340379/document>, 2016
 35. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6

[9] D. Krupka, A theory of generally invariant Lagrangians for the metric fields II, *Internat. J. Theoret. Phys.* 15 (1976) 949-959

1. J.J. Slawianowski, Spherical and Conformal Symmetries of Relativistic Continu-

- um. Spherically Symmetric Solutions, *Internat. J. Theoret. Phys.* 11 (1976) 949-959
2. J. Novotny, On the generally invariant lagrangians for the metric field and other tensor fields, *Internat. J. Theoret. Phys.* 17 (1978) 677-684
 3. V. Mikolasova, On the functional independence of scalar invariants of curvature for dimensions $n=2,3,4$, *Math. Slovaca* 32 (1982) 349-354
 4. M. Ferraris, M. Francaviglia, C. Reina, Sur les fibres d'objets geometriques et leur applications physiques, *Ann. Inst. H. Poincare* 38 (1983) 371-383
 5. M. Ferraris, M. Francaviglia, Energy-momentum tensors and stress tensors in geometric field theories, *J. Math. Phys.* 26 (1985) 1243-1252
 6. J.J., Sklawianowski, Fields of linear frames as a fundamental self-interacting system, *Rep. Math. Phys.* (1985)
 7. J. Novotny, On the generally invariant theories of gravitation, in J. Szenthe, L. Tamassy, *Topics in Differential Geometry*, Coll. Math. J. Bolyai, 46, Proc. Conf., Debrecen, Hungary, 1984; North Holland, 1988, 959-971
 8. J. Novotny, Identities connected with the second theorem of E. Noether in generally invariant gravitational theories, in J. Janyska, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1989; World Scientific, Singapore, 1990, 383-388
 9. J. Novotny, *O kanonickem a symetrickem tenzoru energie-impulzu v relativistickych teoriich*, Assoc. Prof. (Doc.) Dissertation, Faculty of Science, J.E. Purkyne University, Brno, 1990
 10. J. Gancarzewicz, W. Mikulski, Z. Pogoda, Natural bundles and natural liftings prolongations of geometric structures, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 281-320
 11. L. Fatibene, M. Ferraris, M. Francaviglia, M. Godina, Gauge formalism for general relativity and fermionic matter, *Gen. Relat. Gravit.* 30 (1998) 1371-1389
 12. L. Fatibene, M. Ferraris, M. Francaviglia, et al., Remarks on Noether charges and black holes entropy, *Ann. Phys.* 275 (1999) 27-53
 13. J. Janyska, Natural Lagrangian structures, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166
- [10] **D. Krupka, On a class of variational problems defined by polynomial lagrangians, *Arch. Math.* 12 (1976) 99-106**
1. V. Aldaya, I.A. de Azcarraga, Variational principles on r th order jets of fibre bundles in field theory, *J. Math. Phys.* 19 (1978) 1969-1975
 2. V. Aldaya, I.A. de Azcarraga, *Geometric formulation of classical mechanics and field theory*, *Lei Rivista del Nuovo Cimento* 10 (1980)
- [11] **D. Krupka, A map associated to the Lepagean forms of the calculus of variations in fibered manifolds, *Czechoslovak Math. J.* 27 (1977) 114-118**
1. O. Krupkova, *A Geometric Theory of Variational Ordinary Differential Equations*, Assoc. Prof. Dissertation, Silesian Univ., Opava, 1995, 165 pp.
 2. W. H. Steeb, W. Erig, W. Strampp, Similarity solutions of nonlinear Dirac equations and conserved currents, *J. Math. Phys.* 23 (1982) 145-153
 3. M. de Leon, P.R. Rodrigues, *Generalized Classical Mechanics and Field Theory*, North-Holland Math. Studies 112, North-Holland, Amsterdam-New York-Oxford, 1985
 4. R. Hermann, Differential form methods in the theory of variational systems and lagrangian field theories, *Acta Appl. Math.* 12 (1988) 35-78

5. M.J. Gotay, An exterior differential systems approach to the Cartan form, Proc. Internat. Coll. "Geometrie Symplectique and Physique Mathematique", Birkhauser, 1991
6. D.R. Grigore, A generalized lagrangian formalism in particle mechanics and classical field theory, Fortschr. Phys. 41 (1993) 569-617
7. D.R. Grigore, Noetherian symmetries in particle mechanics and classical field theory, in Spinors, Twistors, Clifford Algebras and Quantum Deformations, Kluwer Acad. Publishers, 1993, 371-377
8. D.R. Grigore, Conformal invariance in classical field theory, Modern Physics Letters A, 9 (1994) 225-239
9. D.R. Grigore, On equations with universal invariance, J. Phys. A-Math. Gen. 28 (1995) L49-L57
10. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
11. D.R. Grigore, O.T. Popp, On the Lagrange-Souriau form in classical field theory, Math. Bohemica 123 (1998) 73-86
12. O. Krupkova, D. Smetanova, Legendre transformation for regularizable Lagrangians in field theory, Lett. Math. Phys. 58 (2001) 189-204
13. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
14. O. Krupkova, Hamiltonian field theory, J. Geom. Phys. 43 (2002) 93-132
15. M. Crampin, D.J. Saunders, The Hilbert-Caratheodory form for parametric multiple integral problems in the calculus of variations, Acta Appl Math. 76 (2003) 37-55
16. D. Smetanova, *The Regularity Problem in the Calculus of Variations*, PhD Dissertation, Palacky University Olomouc, Faculty of Science, 2003
17. A. Hakova, O. Krupkova, Variational first-order partial differential equations, J. Differential Equations 191 (2003) 67-89
18. D.J. Saunders, Homogeneous Lagrangian systems, Rep. Math. Phys. 51 (2003) 315-324
19. M. Crampin, D. Saunders, The Hilbert-Caratheodory and Poincare-Cartan forms for higher-order multiple-integral variational problems, Houston J. Math. 30 (2004) 657-689
20. O. Krupkova, The geometry of variational equations, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 19-38
21. M. Crampin, D. Saunders, On null Lagrangians, Diff. Geom. Appl. (2005) 131-146
22. O. Krupkova, Partial differential equations with differential constraints, J. Diff. Equations 220 (2006) 354-395
23. D.R. Grigore, Lagrangian formalism on Grasmann manifolds, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
24. D.J. Saunders, Jet manifolds and natural bundles, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 2008, 327-373
25. D.J. Saunders, The Cartan form, 20 years on, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 527-537
26. O. Krupkova, Lepage forms in the calculus of variations, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 27-55
27. D.R. Grigore, On a generalization of the Poincare-Cartan form in higher-order field theory, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 57-76
28. D.J. Saunders, Krupka's fundamental Lepage equivalent and the excess function of Wilkins, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*,

- in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 77-84
29. D. Smetanova, *The regularity problem in the calculus of variations*, PhD Dissertation, Palacky Univ., Faculty of Science, Olomouc, 2003
 30. J. Brajercik, *Higher order invariant variational principles on frame bundles*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2005, 58 pp.
 31. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
 32. O. Krupkova, D. Smetanova, Lepage equivalents of second-order Euler- Lagrange forms and the inverse problem of the calculus of variations, *J. Nonlinear Math. Phys.* 16 (2009) 235-250
 35. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
 36. M. Palese, O. Rossi, E. Winterroth, J. Musilova, Variational sequences, representation sequences and applications in physics, *Sigma* 12 (2016) 045, 45 pp.; <http://dx.doi.org/10.3842/SIGMA.2016.045>

[12] D. Krupka, A theory of generally invariant Lagrangians for the metric fields I, Internat. J. Theoret. Phys. 17 (1978) 359-368

1. J. Novotny, On the generally invariant lagrangians for the metric field and other tensor fields, *Internat. J. Theoret. Phys.* 17 (1978) 677-684
2. V. Mikolasova, On the functional independence of scalar invariants of curvature for dimensions $n=2,3,4$, *Math. Slovaca* 32 (1982) 349-354
3. M. Ferraris, M. Francaviglia, C. Reina, Sur les fibres d'objets geometriques et leur applications physiques, *Ann. Inst. H. Poincare* 38 (1983) 371-383
4. M. Ferraris, M. Francaviglia, Energy-momentum tensors and stress tensors in geometric field theories, *J. Math. Phys.* 26 (1985) 1243-1252
5. J. Novotny, On the generally invariant theories of gravitation, in J. Szenthe, L. Tamassy, *Topics in Differential Geometry*, Coll. Math. J. Bolyai, 46, Proc. Conf., Debrecen, Hungary, 1984; North Holland, 1988, 959-971
6. J. Novotny, Identities connected with the second theorem of E. Noether in generally invariant gravitational theories, in J. Janyska, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1989; World Scientific, Singapore, 1990, 383-388
7. J. Novotny, *On the canonical and symmetric energy-momentum tensor in relativistic theories* (O kanonickem a symetrickem tenzoru energie-impulzu v relativistickyh teoriich, in Czech) Assoc. Prof. (Doc.) Dissertation, Faculty of Science, J.E. Purkyne University, Brno, 1990
8. J. Gancarzewicz, W. Mikulski, Z. Pogoda, Natural bundles and natural liftings prolongations of geometric structures, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 281-320
9. L. Fatibene, M. Ferraris, M. Francaviglia, M. Godina, Gauge formalism for general relativity and fermionic matter, *Gen. Relat. Gravit.* 30 (1998) 1371-1389
10. L. Fatibene, M. Ferraris, M. Francaviglia, Remarks on Noether Charges and Black Holes Entropy, *Annals of Physics* 10/1998; 275(1-275):27-53; DOI:10.1006/aphy.1999.5915
11. J. Janyska, Natural Lagrangian structures, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166

[13] D. Krupka, Elementary theory of differential invariants, Arch. Math. 14

(1978) 207-214

1. M. Ferraris, M. Francaviglia, C. Reina, Sur les fibres d'objets géométriques et leur applications physiques, *Ann. Inst. H. Poincaré* 38 (1983) 371-383
2. I. Kolar, Natural transformations of the second tangent functor into itself, *Arch. Math.* 20 (1984) 169-172
3. J. Janyska, On natural operations with linear connections, *Czechoslovak Math. J.* 35 (1985) 106-115
4. J. Janyska, Geometrical properties of prolongation functors, *Cas. pest. mat.* 110 (1985) 77-86
5. J. Slovák, Smooth structures on fibre jet spaces, *Czechoslovak Math. J.* 36 (1986) 358-375
6. O. Kowalski, M. Sekizawa, Natural transformations of Riemannian metrics on manifolds to metrics on tangent bundles - a classification, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1986; Kluwer Academic Publishers, 1987, 149-178
7. M. Sekizawa, Natural transformation of affine connections on manifolds to metrics on cotangent bundles, Proc. Conf. Srni, January 1986; *Suppl. Rend. Circ. Mat. Palermo, Ser. II*, No. 14 (1987) 129-142
8. M. Sekizawa, Natural transformations of symmetric affine connections on manifolds to metrics on linear frame bundles: A classification, *Monatsh. Math.* 105 (1988) 229-243
9. M. Sekizawa, Natural transformations of vector fields on manifolds to vector fields on tangent bundles, *Tsukuba J. Math.* 12 (1988) 115-128
10. A. Dekret, Vector fields and connections on TM, *Cas. pest. mat.* 115 (1990) 360-367
11. J. Janyska, Natural and gauge-natural operators on the space of linear connections on a vector bundle, in J. Janyska, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1989; World Scientific, Singapore, 1990, 58-68
12. J. Janyska, Remarks on the Nijenhuis tensor and almost complex connections, *Arch. Math.* 26 (1990) 229-240
13. J. Janyska, Natural operations with projectable tangent valued forms on a fibred manifold, *Ann. Mat. Pur. Appl.* 159 (1991) 171-187
14. I. Kolar, *Natural bundles and operators* (Russian), in *Itogi Nauki i Tekhniki*, Ser. Probl. Geom. 23, VINITI, Moscow, 1991, 67-98
15. Dao Qui Chau, *2nd Order Differential Invariants on the Bundle of Frames*, PhD dissertation, Masaryk University, Brno, 1991, 57 pp.
16. M. Ferraris, M. Francaviglia, Conservation laws in general relativity, *Classical Quant. Grav.* (Suppl. 5) 9 (1992) 79-95
17. J. Janyska, M. Modugno, Infinitesimal natural and gauge natural lifts, *Diff. Geom. Appl.* 2 (1992) 99-121
18. J. Gancarzewicz, W. Mikulski, Z. Pogoda, Natural bundles and natural liftings prolongations of geometric structures, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 281-320
19. I. Kolar, P.W. Michor, J. Slovák, *Natural Operations in Differential Geometry*, Springer, Berlin-Heidelberg-New York, 1993
20. M.D. Calvo, G.G.R. Keilhauer, Tensor fields of type (0,2) on the tangent bundle of a Riemannian manifold, *Geometriae Dedicata* 71 (1998) 209-219
21. J. Debecki, The natural operators transforming affinors to tensor fields of type (4,4), *Publ. Math. Debrecen* 59 (1991) 363-378
22. J. Janyska, A remark on natural quantum Lagrangians and natural generalized Schrödinger operators in Galilei quantum mechanics, *Rend. Circ. Mat. Palermo, Suppl.* 66 (2001) 117-128
23. O. Kowalski, M. Sekizawa, Invariance on g -natural metrics on tangent bundles, in

- O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 171-181
24. J. Janyska, Natural Lagrangian structures, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166
 25. O. Kowalski, M. Sekizawa, Natural lifts in Riemannian geometry, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166
 26. M. Sekizawa, On Riemannian geometry of orthonormal frame bundles, *Note di Matematica* 28 (2008) 383-394
 27. O. Kowalski, M. Sekizawa, Invariance of g-natural metrics on linear frame bundles, *Arch. Math.* 44 (2008) 139-147
 28. M. Markl, Natural differential operators and graph complexes, *Diff. Geom. Appl.* (2009) 257-278
- [14] **M. Horak, D. Krupka, On the first order invariant Einstein-Cartan variational structures, *Internat. J. Theoret. Phys.* 17 (1978) 573-584**
1. I.N. Obukhov, To the theory of gravitation with torsion and non-metricity, *Proc 9th Internat. Conf. on General Relativity and Gravitation*, Abstracts Vol. 3, Jena (1980) 637-638
 2. J. Novotny, On the generally invariant lagrangians for the metric field and other tensor fields, *Internat. J. Theoret. Phys.* 17 (1978) 677-684
 3. V. Mikolasova, On the functional independence of scalar invariants of curvature for dimensions $n=2,3,4$, *Math. Slovaca* 32 (1982) 349-354
 4. M.Y. Kalmykov, P.I. Pronin, One-loop effective action in gauge gravitational theory, *Il Nuovo Cimento B* 106 (1991) 1401-1415
- [15] **D. Krupka, Mathematical theory of invariant interaction lagrangians, *Czech. J. Phys. B* 29 (1979) 300-303**
1. D.R. Grigore, Local gauge invariant Lagrangians in classical field theories, *J. Math. Phys.* 25 (1984) 1531-1538
- [16] **D. Krupka, Fundamental vector fields on the type fibres of jet prolongations of tensor bundles, *Math. Slovaca* 29 (1979) 159-167**
1. I. Kolar, *Natural bundles and operators* (Russian), in *Itogi Nauki i Tekhniki*, Ser. Probl. Geom. 23, VINITI, Moscow, 1991, 67-98
 2. J. Gancarzewicz, W. Mikulski, Z. Pogoda, Natural bundles and natural liftings prolongations of geometric structures, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 281-320
 3. I. Kolar, P.W. Michor, J. Slovak, *Natural Operations in Differential Geometry*, Springer, Berlin-Heidelberg-New York, 1993
- [17] **D. Krupka, Reducibility theorems for differentiable liftings in fibre bundles, *Arch. Math.* 15 (1979) 93-106**
1. J. Gancarzewicz, Liftings of functions and vector fields to natural bundles, in O. Kowalski, Ed., *Differential Geometry and its Applications*, Proc. Conf., N.

- Mesto na Morave, Czechoslovakia, Sept. 1980; Charles University, Prague, 1982, 89-102
2. M. Ferraris, M. Francaviglia and C. Reina, A constructive approach to bundles of geometric objects on a differentiable manifold. *J. Math. Phys.* 24 (1983) 120-124
 3. M. Ferraris, M. Francaviglia, C. Reina, Sur les fibres d'objets geometriques et leur applications physiques, *Ann. Inst. H. Poincare* 38 (1983) 371-383
 4. J. Gancarzewicz, *Liftings of functions and vector fields to natural bundles*, *Dissertationes Mathematicae*, CCXII, PWN, Warszawa, 1983
 5. J. Janyska, Geometrical properties of prolongation functors, *Cas. pest. mat.* 110 (1985) 77-86
 6. I. Kolar, *Natural bundles and operators* (Russian), in *Itogi Nauki i Tekhniky*, Ser. Probl. Geom. 23, VINITI, Moscow, 1991, 67-98
 7. J. Gancarzewicz, W. Mikulski, Z. Pogoda, Natural bundles and natural liftings prolongations of geometric structures, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 281-320
 8. I. Kolar, P.W. Michor, J. Slovak, *Natural Operations in Differential Geometry*, Springer, Berlin-Heidelberg-New York, 1993
- [18] **D. Krupka, On the Lie algebras of higher differential groups, *Bull. Acad. Polon. Sci., Ser. Sci. Math. Astronom. Phys.* 27 (1979) 235-239**
1. M. Ferraris, M. Francaviglia, C. Reina, Sur les fibres d'objets geometriques et leur applications physiques, *Ann. Inst. H. Poincare* 38 (1983) 371-383
 2. I. Kolar, P.W. Michor, J. Slovak, *Natural Operations in Differential Geometry*, Springer, Berlin-Heidelberg-New York, 1993
- [19] **D. Krupka, A remark on algebraic identities for the covariant derivatives of the curvature tensor, *Arch. Math.* 16 (1980) 205-211**
1. J.F. Pommaret, Explicit calculation of certain differential identities used in mathematical physics, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1986; *Math. Appl., East Eur. Series* 27, Reidel, Dordrecht, 1987, 271-278
 2. I. Kolar, P.W. Michor, J. Slovak, *Natural Operations in Differential Geometry*, Springer, Berlin-Heidelberg-New York, 1993
- [20] **D. Krupka, Finite order liftings in principal fiber bundles, *Beiträge zur Algebra und Geometrie* 11 (1981) 21-27**
1. I. Kolar, *Natural bundles and operators* (Russian), in *Itogi Nauki i Tekhniky*, Ser. Probl. Geom. 23, VINITI, Moscow, 1991, 67-98
 2. I. Kolar, P.W. Michor, J. Slovak, *Natural Operations in Differential Geometry*, Springer, Berlin-Heidelberg-New York, 1993
- [21] **D. Krupka, On the local structure of the Euler-Lagrange mapping of the calculus of variations, in O. Kowalski, Ed., *Differential Geometry and its Applications*, Proc. Conf., N. Mesto na Morave, Czechoslovakia, Sept. 1980; Charles University, Prague, 1982, 181-188; arXiv:math-ph/0203034**
1. J. Chrastina, Inverse problem of the classical calculus of variations, *Arch. Math.* 18 (1982) 9-14

2. J. Novotny, On the inverse variational problem in the classical mechanics, in O. Kowalski, Ed., *Differential Geometry and its Applications*, Proc. Conf., N. Mesto na Morave, Czechoslovakia, Sept. 1980; Charles University, Prague, 1982, 189-195
3. L. Klapka, Euler-Lagrange expressions and closed two-forms in higher order mechanics, in *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; D. Krupka, Ed., J.E. Purkyne Univ., Brno, 1984, 149-153
4. M. Stefanova, O. Stepankova, Variationality and invariance of systems of partial differential equations, *Scripta Fac. Sci. Nat. UJEP Brunensis (Physica)* 5 (1985) 283-288
5. O. Krupkova, Lepagean 2-forms in higher order Hamiltonian mechanics, I. Regularity, *Arch. Math.* 22 (1986) 97-120
6. O. Krupkova, A note on the Helmholtz conditions, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications, Communications*, Proc. Conf. Vol. 2, Brno, Czechoslovakia, Aug. 1986; J.E. Purkyne Univ., Brno, 1987, 181-188
7. O. Krupkova, Variational Analysis on Fibered Manifolds Over 1-dimensional Bases, PhD (CSc) Dissertation, Silesian Univ., Opava, 1992
8. O. Krupkova, On the inverse problem of the calculus of variations for ordinary differential equations, *Math. Bohemica* 118 (1993) 261-276
9. O. Krupkova, *A Geometric Theory of Variational Ordinary Differential Equations*, Assoc. Prof. Dissertation, Silesian Univ., Opava, 1995, 165 pp.
10. O. Krupkova, Symmetries and first integrals of time-dependent higher-order constrained systems, *J. Geom. Phys.* 18 (1996) 38-58
11. D.R. Grigore, On an order reduction theorem in the Lagrangian formalism, *Nuovo Cim., Fisica B-General physics, relativity, astronomy and mathematical physics and methods*, 111 (1996) 1 439-1 447
12. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
13. D.R. Grigore, Variational equations and symmetries in the lagrangian formalism - arbitrary vector-fields, *Fortschr. Phys.* 45 (1997) 727-751
14. D.R. Grigore, The variational sequence on finite jet bundle extensions and the Lagrangian formalism, *Diff. Geom. Appl.* 10 (1999) 43-77
15. M. Mraz, J. Musilova, Variational compatibility of force laws, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 553-561
16. O. Krupkova, Differential systems in higher order mechanics, in D. Krupka, Ed., *Proceedings of the Seminar on Differential Geometry*, Silesian Univ., Opava, Czech Republic, 2000, 87-130
17. O. Krupkova, Hamilton field theory revisited: A geometric approach to regularity, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 187-207
18. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
19. O. Krupkova, Hamiltonian field theory, *J. Geom. Phys.* 43 (2002) 93-132
20. D. Smetanova, *The Regularity Problem in the Calculus of Variations*, PhD Dissertation, Palacky University Olomouc, Faculty of Science, 2003
21. A. Hakova, O. Krupkova, Variational first-order partial differential equations, *J. Differential Equations* 191 (2003) 67-89
22. D. Smetanova, *The regularity problem in the calculus of variations*, PhD Dissertation, Palacky Univ., Faculty of Science, Olomouc, 2003
23. J. Kotulek, Z historie inverzniho variacniho problem: Odvozeni podminek silne variacnosti, *Pokroky matematiky, fyziky a astronomie*, 48 (2003), 222--238
24. O. Krupkova, The geometry of variational equations, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP

- Conf. Proc. 729, American Institute of Physics, 2004, 19-38
25. O. Krupkova, Partial differential equations with differential constraints, *J. Diff. Equations* 220 (2006) 354-395
 26. A. Spiro, Cohomology of Lagrange complexes invariant under pseudogroups of local transformations, *Internat. J. Geom. Methods in Modern Phys.* 4 (2007) 669-705
 27. O. Krupkova, Helmholtz conditions in the geometry of SODEs, in F. Cantrijn, B. Langerock, Eds., *Differential Geometric Methods in Mechanics and Field Theory*, Volume in Honour of W. Sarlet, Gent, Academia Press, 2007, 91-90
 28. V. Petrehus, Variational integrators for higher order Lagrangians, *Bull. Math. Soc. Sci. Math. Roum.* 50 (2007) 169-182
 29. O. Krupkova, G.E. Prince, Second order ordinary differential equations in jet bundles and the inverse problem of the calculus of variations, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 30. J. Musilova, M. Lenc, Lepage forms in variational theories: From Lepage's idea to the variational sequence, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 3-26
 31. O. Krupkova, Lepage forms in the calculus of variations, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 27-55
 32. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
 33. O. Krupkova, D. Smetanova, Lepage equivalents of second-order Euler-Lagrange forms and the inverse problem of the calculus of variations, *J. Nonlinear Math. Phys.* 16 (2009) 235-250
 34. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
 35. N. Voicu, Source forms and their variational completions, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6
 36. O. Rossi, D. Saunders, Lagrangian and Hamiltonian duality, *Journal of Mathematical Sciences* 6 (2017) 813-819
- [22] **M. Francaviglia, D. Krupka, The Hamiltonian formalism in higher order variational problems, *Ann. Inst. H. Poincare, Sec. A* 37 (1982) 295-315**
1. M. Horak, *On geometry of the Lagrange and Hamilton formalism of higher order*, PhD (CSc)-Dissertation, in Czech, Faculty of Mathematics and Physics, Charles University, Prague, 1982
 2. M. Ferraris, M. Francaviglia, On the globalization of Lagrangian and Hamiltonian formalisms in higher order mechanics, in S. Benenti, M. Francaviglia, A. Lichnerowicz, Eds., *Modern Developments in Analytical Mechanics*, Proc. IUTAM-ISIMM Sympos., Turin, June 1982; Academy of Sciences of Turin, 1983, 109-125
 3. M. Ferraris, M. Francaviglia, On the global structure of Lagrangian and Hamiltonian formalism in higher order calculus of variations, in Proc. Internat. Meeting "Geometry and Physics", Florence, 1982; Pitagora Editrice Bologna 1983, 43-70
 4. P.L. Garcia, J. Munoz, On the geometrical structure of higher order variational calculus, in S. Benenti, M. Francaviglia, A. Lichnerowicz, Eds., *Modern Developments in Analytical Mechanics*, Proc. IUTAM-ISIMM Sympos., Turin, June 1982; Academy of Sciences of Turin, 1983, 127-147
 5. M. Horak, I. Kolar, On the higher order Poincare-Cartan forms, *Czechoslovak Math. J.* 33 (1983) 467-475

6. G. Cognola, L. Vanzo, S. Zerbini, A note on the canonical quantization for acceleration-dependent Lagrangians, *Lett. Nuovo Cim.* 38 (1983) 533-538
7. P. Dedecker, Existe-t-il en calcul des variations, un formalisme de Hamilton-Jacobi-E. Cartan pour les integrales multiples d'ordre superieur, *C. R. Acad. Sci. Paris* 298, Serie I (1984) 397-400
8. M. Ferraris, M. Francaviglia, Global formalism in higher order calculus of variations, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 93-118
9. J.M. Masque, Canonical Cartan equations for higher order variational problems, *Geometrodynamics Proc.* 1983, Pitagora, 1984, 49-55
10. P.R. Rodrigues, *Mecanica em fibrados dos jatos de ordem superior*, Publicaciones del Departamento de Geometria y Topologia, Universidad de Santiago di Compostella, 61 (1984)
11. M. de Leon, P.R. Rodrigues, *Generalized Classical Mechanics and Field Theory*, North-Holland Math. Studies 112, North-Holland, Amsterdam-New York-Oxford, 1985
12. J.F. Pommaret, Differential sequences and higher order variational calculus, in J. Szenthe, L. Tamassy, *Topics in Differential Geometry*, Coll. Math. J. Bolyai, 46, Proc. Conf., Debrecen, Hungary, 1984; North Holland, 1988
13. M. Ferraris, M. Francaviglia, Applications of the Poincare-Cartan form in higher order field theories, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1986; Kluwer Academic Publishers, 1987, 31-52
14. V. Szczyrba, Hamiltonian dynamics of higher-order theories of gravity, *J. Math. Phys.* 28 (1987) 146-158
15. V. Szczyrba, Stephenson-Kilmister-Yang theory of gravity and its dynamics, *Phys. Rev. D* 36 (1987) 351-374
16. E. Pagani, G. Tecchiolli, S. Zerbini, On the problem of stability for higher-order derivative Lagrangian systems, *Lett. Math. Phys.* 14 (1987) 311-319
17. G. Magnano, On the Legendre transformation for a Class of non-regular higher-order field theories, *Sissa-ISAS*, 3401 Trieste, 162 (1988), 1-38
18. G. Magnano, M. Ferraris, M. Francaviglia, On the Legendre transformation for a class of nonregular higher order lagrangian field theories, *J. Math. Phys.* 31 (1990) 378-387
19. M.J. Gotay, A multisymplectic framework for classical field theory and the calculus of variations, I. Covariant Hamiltonian formalism, in *Mechanics, Analysis and Geometry: 200 years after Lagrange*, North Holland, 1991, 203-235
20. P. Horava, On a covariant Hamilton-Jacobi framework for the Einstein-Maxwell theory, *Classical Quant. Grav.* 8 (1991) 2069-2084
21. J.F. Pommaret, *Partial Differential Equations and Group Theory*, Kluwer, 1994
22. J.F. Pommaret, Differential sequences and variational calculus, *C. R. Acad. Sci. Paris* 320, Serie I - Mathematique (1995) 207-212
23. J.F. Pommaret, Spencer sequence and variational sequence, *Acta Appl. Math.* 41 (1995) 285-296
24. R. Vitolo, Bicompleksi Lagrangiani ed applicazioni alla meccanica relativistica classica e quantistica, Tesi di Dottorato in Matematica, Universita di Firenze, 1996, 175 pp.
25. F.B. Estabrook, R.S. Robinson, H.D. Wahlquist, Constraint-free theories of gravitation, *Class. Quant. Grav.* 16 (1999) 911-918
26. M. Francaviglia, M. Palese, E. Winterroth, A new geometric proposal for the Hamiltonian description of classical field theories, in *Differential Geometry and Its Applications*, Proc. Conf., Opava, Czech Republic, 2001, O. Kowalski, D. Krupka, J. Slovák, Eds.; Silesian University Opava, 2001, 415-423
27. G. Allemandi, L. Fatibene, M. Ferraris et al., Noether conserved quantities and entropy in general relativity, in R. Cianchi et al., Eds., *Recent Developments in*

- Gen. Relat.*, Genoa 2000, 14th SIGRAV Conf., Springer, 2002, 75-91
28. M. Crampin, D. Saunders, The Hilbert-Caratheodory and Poincare-Cartan forms for higher-order multiple-integral variational problems, *Houston J. Math.* 30 (2004) 657-689
- [23] **D. Krupka, Local invariants of a linear connection, in Differential Geometry, Colloq. Math. Soc. Janos Bolyai 31, North Holland, 1982, 349-369**
1. J. Janyska, On natural operations with linear connections, *Czechoslovak Math. J.* 35 (1985) 106-115
 2. J. Janyska, Connections naturally induced from the metric tensor and its derivatives of finite order, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications, Communications*, Proc. Conf. Vol. 2, Brno, Czechoslovakia, Aug. 1986; J.E. Purkyne Univ., Brno, 1987, 143-156
 3. M. Modugno, New results on the theory of connections, systems, overconnections, and prolongations, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1986; *Math. Appl., East Eur. Series 27*, Reidel, Dordrecht, 1987, 243-269
 4. J.F. Pommaret, Explicit calculation of certain differential identities used in mathematical physics, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1986; *Math. Appl., East Eur. Series 27*, Reidel, Dordrecht, 1987, 271-278
 5. J. Janyska, Natural and gauge-natural operators on the space of linear connections on a vector bundle, in J. Janyska, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1989; World Scientific, Singapore, 1990, 58-68
 6. J. Janyska, Remarks on the Nijenhuis tensor and almost complex connections, *Arch. Math.* 26 (1990) 229-240
 7. Dao Qui Chau, *2nd Order Differential Invariants on the Bundle of Frames*, PhD dissertation, Masaryk University, Brno, 1991, 57 pp.
 8. I. Kolar, P.W. Michor, J. Slovák, *Natural Operations in Differential Geometry*, Springer, Berlin-Heidelberg-New York, 1993
 9. V. Studený, Natural vector fields on tangent bundles, *Archivum Mathematicum*, vol. 30 (1994), issue 4, pp. 277-283
 10. M. Krupka, Order reduction of differential invariants, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; *Silesian Univ., Opava*, 1993, 321-334
 11. R. Miron, *The Geometry of Higher Order Lagrange Spaces. Applications to Mechanics and Physics*, Kluwer, 1997
 12. I. Kolar, *Natural bundles and operators* (Russian), in *Itogi Nauki i Tekhniki, Ser. Probl. Geom.* 23, VINITI, Moscow, 1991, 67-98
 13. P. Musilova, *Differential Invariants of Immersions of Manifolds with Metric Fields*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
 14. J. Kotulek, *Historical Notes on the Inverse Problem of the Calculus of Variations*, Thesis, Silesian University Opava, 2002, 29 pp.
 15. J. Janyska, Reduction theorems for general linear connections, *Diff. Geom. Appl.* 20 (2004) 177-196
 16. P. Musilova, J. Musilova, Differential invariants of immersions of manifolds with metric fields, *Commun. Math. Phys.* 249 (2004) 319-329
 17. P. Musilova, J. Musilova, Natural operators of smooth mappings of manifolds with metric fields, *Rep. Math. Phys.* 54 (2004) 273-283
 18. J. Janyska, Natural Lagrangian structures, in O. Krupkova, D. Saunders, Eds. *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166
 19. J. Brajercik, Euler-Poincare reduction on frame bundles, *Diff. Geom. Appl.* 29,

Suppl. 1, 33-40

20. J. Brajercik and M. Demko, Second-order natural Lagrangians on coframe bundles, *Miskolc Mathematical Notes* 14 (2013) 487-494

[24] **D. Krupka, Lepagean forms in higher order variational theory, in S. Benenti, M. Francaviglia, A. Lichnerowicz, Eds., *Modern Developments in Analytical Mechanics*, Proc. IUTAM-ISIMM Sympos., Turin, June 1982; Academy of Sciences of Turin, 1983, 197-238**

1. J. Chrastina, A double complex related with a system of partial differential equations II, *Arch. Math.* 19 (1983) 133-142
2. J. Chrastina, Another approach to the classical calculus of variations II, Hamiltonian theory, *Arch. Math.* 19 (1983) 173-186
3. M. Ferraris, M. Francaviglia, On the globalization of Lagrangian and Hamiltonian formalisms in higher order mechanics, in S. Benenti, M. Francaviglia, A. Lichnerowicz, Eds., *Modern Developments in Analytical Mechanics*, Proc. IUTAM-ISIMM Sympos., Turin, June 1982; Academy of Sciences of Turin, 1983, 109-125
4. M. Ferraris, M. Francaviglia, On the global structure of Lagrangian and Hamiltonian formalism in higher order calculus of variations, in Proc. Internat. Meeting "Geometry and Physics", Florence, 1982; Pitagora Editrice Bologna 1983, 43-70
5. P.L. Garcia, J. Munoz, On the geometrical structure of higher order variational calculus, in S. Benenti, M. Francaviglia, A. Lichnerowicz, Eds., *Modern Developments in Analytical Mechanics*, Proc. IUTAM-ISIMM Sympos., Turin, June 1982; Academy of Sciences of Turin, 1983, 127-147
6. L. Klapka, Integrals of motion and semi-regular Lepagean forms in higher-order mechanics, *J. Phys. A-Math. Gen.* 16 (1983) 3783-3794
7. M. Ferraris, Fibered connections and global Poincare-Cartan forms in higher-order calculus of variations, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 61-92
8. M. Ferraris, M. Francaviglia, Global formalism in higher order calculus of variations, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 93-118
9. P.L. Garcia, J.M. Masque, Higher order analytical dynamics, Dynamical systems and Partial Differential Equations, Proc. VII ELAM, ed. by L. Lara-Carrero, J. Lewowicz, Univ. Simon Bolivar, Caracas, 1984, 19-47
10. L. Klapka, Euler-Lagrange expressions and closed two-forms in higher order mechanics, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 149-153
11. I. Kolar, A geometric version of the higher order Hamilton formalism in fibred manifolds, *Journ. Geom. Phys.* 1 (1984) 127-137
12. I. Kolar, Some geometric aspects of the higher order variational calculus, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 155-166
13. O. Krupkova, The local inverse problem of the calculus of variations in higher order Hamiltonian mechanics, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 275-287
14. M. Marvan, On global Lepagean equivalents, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 155-166

15. J. Munoz-Masque, Canonical Cartan equations for higher order variational problems, *J. Geom. Phys.* 1 (1984) 1-7
16. M. Ferraris, M. Francaviglia, On the globalization of Lagrangian and Hamiltonian formalisms in higher order mechanics, in S. Benenti, M. Francaviglia, A. Lichnerowicz, Eds., *Modern Developments in Analytical Mechanics*, Proc. IUTAM-ISIMM Sympos., Turin, June 1982; Academy of Sciences of Turin, 1983, 109-125
17. M. Ferraris, M. Francaviglia, On the global structure of Lagrangian and Hamiltonian formalism in higher order calculus of variations, in Proc. Internat. Meeting "Geometry and Physics", Florence, 1982; Pitagora Editrice Bologna 1983, 43-70
18. P.L. Garcia, J. Munoz, On the geometrical structure of higher order variational calculus, in S. Benenti, M. Francaviglia, A. Lichnerowicz, Eds., *Modern Developments in Analytical Mechanics*, Proc. IUTAM-ISIMM Sympos., Turin, June 1982; Academy of Sciences of Turin, 1983, 127-147
19. M. Ferraris, M. Francaviglia, Global formalism in higher order calculus of variations, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 93-118
20. L. Klapka, Integrals of motion and semi-regular Lepagean forms in higher-order mechanics, *J. Phys. A-Math. Gen.* 16 (1983) 3783-3794
21. L. Klapka, Euler-Lagrange expressions and closed two-forms in higher order mechanics, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 149-153
22. O. Krupkova, The local inverse problem of the calculus of variations in higher order Hamiltonian mechanics, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 275-287
23. J.M. Masque, Canonical Cartan equations for higher order variational problems, *Geometrodynamics Proc.* 1983, Pitagora, 1984, 49-55
24. J. Munoz-Masque, Pre-symplectic structure for higher variational problems, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 191-206
25. N. Prakash, Projective structures in fibered manifolds, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 221-238
26. M. Ferraris, M. Francaviglia, Energy-momentum tensors and stress tensors in geometric field theories, *J. Math. Phys.* 26 (1985) 1243-1252
27. J.M. Masque, An axiomatic characterization of the Poincare-Cartan form for second order variational problems, *Differential Geometric Methods in Mathematical Physics*, Proc. Conf., Clausthal, September 1983; Lecture Notes in Math. 1139, Springer, 1985, 74-84
28. J.M. Masque, On a property of higher order Poincare-Cartan forms in the constructive approach, *Geometrodynamics Proc.* (1985), A. Prastaro, Ed., World Scientific, 1985, 229-236
29. J.M. Masque, Poincare-Cartan Forms in Higher Order Variational Calculus on Fibered Manifolds, *Rev. Mat. Iberoamericana* 1 (1985) 85-126
30. W. Sarlet, M. Crampin, Some recent results on symmetries of Lagrangian systems re-examined, *J. Phys. A-Math. Gen.* 18 (1985) 2849-2855
31. M. Stefanova, O. Stepankova, Variationality and invariance of systems of partial differential equations, *Scripta Fac. Sci. Nat. UJEP Brunensis (Physica)* 5 (1985) 283-288
32. O. Krupkova, Lepagean 2-forms in higher order Hamiltonian mechanics, I. Regularity, *Arch. Math.* 22 (1986) 97-120
33. V. Marino, A. Prastaro, On a geometric generalization of the Noether theorem,

- Differential Geometry, Peniscola 1985, Lecture Notes in Math. 1209, Springer, Berlin-New York, 1986, 222-234
34. V. Aldaya and J.A. de Azcarraga, Group foundations of quantum and classical dynamics: Towards a globalization and classification of some of their structures, *Fortschr. Phys.* 35 (1987) 434-473
 35. J. Chrastina, Recent results on formal calculus of variations and formal theory of differential equations, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications*, Communications, Proc. Conf. Vol. 2, Brno, Czechoslovakia, Aug. 1986; J.E. Purkyne Univ., Brno, 1987, 71-80
 36. M. Ferraris, M. Francaviglia, Applications of the Poincare-Cartan form in higher order field theories, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1986; Kluwer Academic Publishers, 1987, 31-52
 37. M. de Leon, P.R. Rodrigues, A contribution to the global formulation of the higher order Poincare-Cartan form, *Letters in Math. Phys.* 14 (1987) 353-362
 38. D.J. Saunders, Jet fields, connections and 2nd order differential equations, *J. Phys A: Math. Gen.* 20 (1987) 3261-3270
 39. M. Sekizawa, Natural transformation of affine connections on manifolds to metrics on cotangent bundles, Proc. Conf. Srni, January 1986; *Suppl. Rend. Circ. Mat. Palermo, Ser. II, No. 14* (1987) 129-142
 40. I. Horova, On the variational principles for partial differential equations, *Arch. Math.*, 24 (1988) 17-24
 41. G. Magnano, On the Legendre transformation for a Class of non-regular higher-order field theories, *Sissa Digital Library-ISAS*, 3401 Trieste, 162 (1988), 1-38
 42. J. Chrastina, Formal calculus of variations on fibered manifolds, J.E. Purkyne Univ., Brno, 1989
 43. D.J. Saunders, *The Geometry of Jet Bundles*, Cambridge Univ. Press, Cambridge, London. Math. Soc. Lecture Notes Series 142, 1989
 44. V. Tapia, M. Ferraris, M. Francaviglia, Identically vanishing field equations and D-invariance in field theory, *Nuovo Cim. B*, 103 (4) (1989) 435-440
 45. T. Harding, Connections, the Poincare-Cartan form and the Hochschild cohomology of operators, PhD Dissertation, Univ. of Liverpool, U. K., 1990
 46. T.J. Harding, F.J. Bloore, A fresh approach to the Poincare-Cartan form for a linear P.D.E. and a map between cohomologies, in J. Janyska, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1989; World Scientific, Singapore, 1990, 220-229
 47. G. Magnano, M. Ferraris, M. Francaviglia, On the Legendre transformation for a class of nonregular higher order lagrangian field theories, *J. Math. Phys.* 31 (1990) 378-387
 48. V. Aldaya, J. Navarrosalas, M. Navarro, Dynamics on the Virasoro group, 2D gravity and hidden symmetries, *Phys. Lett. B* 260 (1991) 311-316
 49. M. Ferraris, M. Francaviglia, The Lagrangian approach to conserved quantities in general relativity, in *Mechanics, Analysis and Geometry: 200 years after Lagrange*, North Holland, 1991, 451-488
 50. P. Horava, On a covariant Hamilton-Jacobi framework for the Einstein-Maxwell theory, *Classical Quant. Grav.* 8 (1991) 2069-2084
 51. I.M. Anderson, Introduction to the variational bicomplex, *Contemporary Mathematics* 132 (1992) 51-73
 52. I. Anderson, G. Thompson, The inverse problem of the calculus of variations for ordinary differential equations, *Mem. Am. Math. Soc.* 98, 1992
 53. M. Ferraris, M. Francaviglia, Conservation laws in general relativity, *Classical Quant. Grav.* (Suppl. 5) 9 (1992) 79-95
 54. Nong Quoc Chinh, *Sheaves of contact forms and acyclic resolutions on finite jet prolongations of a fibred manifold* (Svazky kontaktních forem a acyklické rezolventy na konečných jetových prodlouženích fibrovane variety, in Czech), PhD (CSc) Dissertation, Brno (Czechoslovakia), 1992, 50 pp.

55. D. Betounes, Global shift operators and the higher order calculus of variations, *Journ. Geom. Phys.* 10 (1993) 185-201
56. M. Ferraris, M. Francaviglia, V. Tapia, Global D-invariance in field theory, *J. Phys. A-Math. Gen.* 26 (1993) 433-442
57. I. Kolar, Natural operators related with the variational calculus, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 461-472
58. O. Krupkova, Liouville and Jacobi theorems for vector distributions, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 75-87
59. O. Krupkova, On the inverse problem of the calculus of variations for ordinary differential equations, *Math. Bohemica* 118 (1993) 261-276
60. P. Olver, Equivalence and the Cartan form, *Acta Appl. Math.* 31 (1993) 99-136
61. D.R. Grigore, Higher-order Lagrangian theories and noetherian symmetries, *Rom. J. Phys.* 39 (1994) 11-35
62. O. Krupkova, Variational metrics on $RxTM$ and the geometry of nonconservative mechanics, *Math. Slovaca* 44 (1994) 315-335
63. O. Krupkova, A geometric setting for higher-order Dirac-Bergmann theory of constraints, *J. Math. Phys.* 35 (1994) 6557-6576
64. I.M. Anderson, J. Pohjanpelto, Variational principles for differential equations with symmetries and conservation laws, I. Second order scalar equations, *Math. Ann.* 29 (1994) 191-222
65. G. Giachetta, L. Mangiarotti, Constrained Hamiltonian systems and gauge theories, *Internat. J. Theoret. Phys.* 34 (1995) 2353-2371
66. D.R. Grigore, Variational equations and symmetries in the Lagrangian formalism, *J. Phys. A-Math. Gen.* 28 (1995) 2921-2937
67. O. Krupkova, *A Geometric Theory of Variational Ordinary Differential Equations*, Assoc. Prof. Dissertation, Silesian Univ., Opava, 1995, 165 pp.
68. R. Miron, A Noether theorem in the higher order Lagrangian mechanics, *Internat. J. Theoret. Phys.* 34 (1995) 1123-1146
69. O. Krupkova, Higher-order constrained systems on fibered manifolds: An exterior differential systems approach, in L Tamassy, J. Szenthe, Eds., *New Developments in Differential Geometry*, Proc. Colloq. on Diff. Geom., Debrecen, Hungary, July 1994; Kluwer Academic Publishers, Dordrecht, 1996, 255-278
70. O. Krupkova, Symmetries and first integrals of time-dependent higher-order constrained systems, *J. Geom. Phys.* 18 (1996) 38-58
71. R. Miron, Noether type theorems in higher order analytical mechanics, in L Tamassy, J. Szenthe, Eds., *New Developments in Differential Geometry*, Proc. Colloq. on Diff. Geom., Debrecen, Hungary, July 1994; Kluwer Academic Publishers, Dordrecht, 1996, 313-317
72. R. Vitolo, Bicompleksi Lagrangiani ed applicazioni alla meccanica relativistica classica e quantistica, Tesi di Dottorato in Matematica, Universita di Firenze, 1996, 175 pp.
73. J.M. Masque, L.M.P. Coronado, Higher-order gauge-invariant lagrangians on T^*M , *J. Phys. A-Math. Gen.* 29 (1996) 7757-7767
74. M Modugno, R. Vitolo, Quantum connection and Poincare-Caeran form, in *Gravitation, electromagnetism and geometric structures*, G. Ferrarese, Ed., Pitagora, Bologna, 1996, 237-279
75. R. Miron, *The Geometry of Higher Order Lagrange Spaces. Applications to Mechanics and Physics*, Kluwer, 1997
76. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
77. O. Krupkova, Mechanical systems with nonholonomic constraints, *J. Math. Phys.* 38 (1997) 5098-5126
78. D.R. Grigore, Trivial second order lagrangians in classical field theory, *Fortschr. Phys.* 47 (1999) 913-936

79. J. Kasparova, A representation of the 1st order variational sequence in field theory, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 493-502
80. D.R. Grigore, The variational sequence on finite jet bundle extensions and the Lagrangian formalism, *Diff. Geom. Appl.* 10 (1999) 43-77
81. O. Krupkova, Differential systems in higher order mechanics, in D. Krupka, Ed., *Proceedings of the Seminar on Differential Geometry*, Silesian Univ., Opava, Czech Republic, 2000, 87-130
82. O. Krupkova, Hamilton field theory revisited: A geometric approach to regularity, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 187-207
83. D. Smetanova, On Hamilton p2-equations in second order field theory, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 329-341
84. I.V. Kanatchikov, Precanonical quantum gravity: Quantization without the space-time decomposition, *Int. J. Theoret. Phys.* 40 (2001) 1121-1149
85. I.V. Kanatchikov, Precanonical quantization and the Schrödinger wave functional, *Phys. Lett. A* 283 (2001) 25-36
86. L. Fatibene, M. Francaviglia, M. Raiteri, Gauge natural field theories and applications to conservation laws, in *Differential Geometry and its Applications*, Proc. Conf, August 2001, Opava, Czech Republic, O. Kowalski, D. Krupka, and J. Slovak, Eds., Silesian University in Opava, Opava, 2003, 401-413
87. O. Krupkova, Hamiltonian field theory, *J. Geom. Phys.* 43 (2002) 93-132
88. D. Smetanova, The Regularity Problem in the Calculus of Variations, PhD Dissertation, Palacky University Olomouc, Faculty of Science, 2003
89. A. Hakova, O. Krupkova, Variational first-order partial differential equations, *J. Differential Equations* 191 (2003) 67-89
90. O. Krupkova, Variational metric structures, *Publ. Math. Debrecen* 62 (2003) 461-495
91. O. Krupkova, Non-variational Hamiltonian structures, *Analele Stiintifice ale universitatii "Al. I. Cuza" Iasi, XLIX Matematica*, 2003, 665-285
92. M. Crampin, D. Saunders, The Hilbert-Caratheodory and Poincare-Cartan forms for higher-order multiple-integral variational problems, *Houston J. Math.* 30 (2004) 657-689
93. D. Smetanova, On regularization of second order Lagrangians, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 289- 296
94. J. Sedenkova, A generalization of Lepage forms in mechanics, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 281-288
95. L. Czudkova, J. Musilova, Variational non-holonomic systems in physics, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 131-140
96. O. Krupkova, The geometry of variational equations, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 19-38
97. L. Fatibene, M. Ferraris, M. Francaviglia, On the gauge-natural structure of modern physics, *Internat. J. Geom. Methods in Modern Phys.* 1 (2004) 443-466
98. M.C. Lopez, J.M. Masque, A report on gauge invariant forms and variational problems on the bundle of connections of a principal U(1)-bundle and the associated vector bundles, *Internat. J. Geom. Methods in Modern Phys.* 1 (2004) 367-404
99. O. Krupkova, J. Musilova, Nonholonomic variational systems, *Rep. Math. Phys.* 55 (2005) 211-220
100. J. Brajercik, Higher order invariant variational principles on frame bundles, PhD

- Dissertation, Masaryk Univ., Faculty of Science, Brno, 2005, 58 pp.
101. O. Krupkova, P. Volny, Euler-Lagrange and Hamilton equations for non-holonomic systems in field theory, *J. Phys. A-Math. Gen.* 38 (2005) 8715-8745
 102. O. Krupkova, Partial differential equations with differential constraints, *J. Diff. Equations* 220 (2006) 354-395
 103. A. Spiro, Cohomology of Lagrange complexes invariant under pseudogroups of local transformations, *Internat. J. Geom. Methods in Modern Phys.* 4 (2007) 669-705
 104. O. Krupkova, Helmholtz conditions in the geometry of SODEs, in F. Cantrijn, B. Langerock, Eds., *Differential Geometric Methods in Mechanics and Field Theory*, in Honour of W. Sarlet, Gent, Academia Press, 2007, 91-90
 105. D.R. Grigore, Lagrangian formalism on Grassmann manifolds, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 106. O. Krupkova, G.E. Prince, Second order ordinary differential equations in jet bundles and the inverse problem of the calculus of variations, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 107. D.J. Saunders, The Cartan form, 20 years on, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 527-537
 108. O. Krupkova, J. Volna, P. Volny, Constrained Lepage forms, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 527-537
 109. S. Preston, Variational theory of balanced systems, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 675-688
 110. O. Krupkova, Lepage forms in the calculus of variations, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 27-55
 111. D.R. Grigore, On a generalization of the Poincare-Cartan form in higher-order field theory, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 57-76
 112. A. Patak, Geometrical Structure of Gauge Theories: Electromagnetism, *Gravitation*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2008, 65 pp.
 113. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
 114. C.M. Campos, M. de Leon, D.M. de Diego, et al., Unambiguous formalism for higher order Lagrangian field theories, *J. Phys. A-Math. Theoret.*, 42 (2009), Article No. 475207
 115. O. Krupkova, D. Smetanova, Lepage equivalents of second-order Euler-Lagrange forms and the inverse problem of the calculus of variations, *J. Nonlinear Math. Phys.* 16 (2009) 235-250
 116. L. Vitagliano, Secondary calculus and the covariant phase space, *J. Geom. Phys.* 59 (2009) 426-447
 117. O. Krupkova, D.J. Saunders, Affine duality and Lagrangian and Hamiltonian systems, *Internat. J. of Geom. Methods in Modern Phys.* 8 (2011) 669-697
 118. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
 119. S. Preston, Forms of Leage type and the balance systems, *Diff. Geom. Appl.* 29, Suppl. 1, 196-206
 120. D. Saunders, Some geometric aspects of the calculus of variations in several independent variables, *Communications in Mathematics* 18 (2010) 3-19
 121. O. Krupkova, R. Malikova, Helmholtz conditions and their generalizations,

- Balkan Journal of Geometry and Its Applications, Vol.15, No.1, 2010, pp. 80-89
122. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6
 123. M. Palese, O. Rossi, E. Winterroth, J. Musilova, Variational sequences, representation sequences and applications in physics, *Sigma* 12 (2016) 045, 45 pp.; <http://dx.doi.org/10.3842/SIGMA.2016.045>
- [25] D. Krupka, J. Musilova, Integrals of motion in higher order mechanics and field theory (in Czech), *Pokroky mat. fyz. astronom.* 28 (1983) 259-266**
1. O. Krupkova, Higher-order constrained systems on fibered manifolds: An exterior differential systems approach, in L. Tamassy, J. Szenthe, Eds., *New Developments in Differential Geometry*, Proc. Colloq. on Diff. Geom., Debrecen, Hungary, July 1994; Kluwer Academic Publishers, Dordrecht, 1996, 255-278
 2. M. de Leon, D.M. de Diego, A. Santamaria-Merino, Symmetries in classical field theory, *Internat. J. Geom. Methods in Modern Phys.* 1 (2004) 651-710
 3. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
 4. M. Crampin, W. Sarlet, F. Cantrijn, Higher-order differential equations and higher-order lagrangian mechanics, *Math Proc Camb Phil Soc.* (1986) 565-587
- [26] D. Krupka and O. Stepankova, On the Hamilton form in second order calculus of variations, in Proc. Internat. Meeting "Geometry and Physics", Florence, October 1982, Pitagora, Bologna, 1983, 85-101**
1. P.L. Garcia, J.M. Masque, Le probleme de la regularite dans le calcul des variations du second ordre, *C. R. Acad. Sci. Math.* 301 (1985) 639-642
 2. V. Szczyrba, Stephenson-Kilmister-Yang theory of gravity and its dynamics, *Phys. Rev. D* 36 (1987) 351-374
 3. M. de Leon, P.R. Rodrigues, A contribution to the global formulation of the higher order Poincare-Cartan form, *Letters in Math. Phys.* 14 (1987) 353-362
 4. P. Olver, Equivalence and the Cartan form, *Acta Appl. Math.* 31 (1993) 99-136
 5. O. Krupkova, A geometric setting for higher-order Dirac-Bergmann theory of constraints, *J. Math. Phys.* 35 (1994) 6557-6576
 6. G. Giachetta and G. Sardanashvily, Energy-momentum superpotential in gravitation theory, in *Gravity, Particles and Space-time*, World Scientific, 1996, 471-506
 7. O. Krupkova, A new look at Dirac's theory of constrained systems, in *Gravity, Particles and Space-time*, World Scientific, 1996, 507-517
 8. M. de Leon, J. Marin-Solano, J.C. Marrero, The constraint algorithm in the jet formalism, *Diff. Geom. Appl.* 6 (1996) 275-300
 9. G.A. Sardanashvily, Stress-energy-momentum tensors in constraint field theories, *J. Math. Phys.* 38 (1997) 847-866
 10. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
 11. G. Giachetta, L. Mangiarotti, G. Sardanashvily, *New Lagrangian and Hamiltonian Methods in Field Theory*, World Scientific, Singapore, 1997
 12. I.V. Kanatchikov, Precanonical perspective in quantum gravity, *Nucl. Phys. B – Proc. Suppl.* 88 (2000) 326-330
 13. O. Krupkova, Hamilton field theory revisited: A geometric approach to regularity, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 187-207
 14. O. Krupkova, D. Smetanova, On regularization of variational problems in first-

- order field theory, *Rend. Circ. Mat. Palermo, Suppl.* 66 (2001) 133-140
15. O. Krupkova, D. Smetanova, Legendre transformation for regularizable Lagrangians in field theory, *Lett. Math. Phys.* 58 (2001) 189-204
 16. M. J. Gotay, J. A. Isenberg, J. E. Marsden and R. Montgomery, *Momentum Mappings and the Hamiltonian Structure of Classical Field Theories with Constraints*, M.S.R.I. Publications, Springer, New York, 2001.
 17. D. Smetanova, On Hamilton p2-equations in second order field theory, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen, June 2000; Debrecen Univ., Debrecen, 2001, 329-341
 18. M. de Leon, J. Marin-Solano, J.C. Marrero, M.C. Munoz-Lecanda, N. Roman-Roy, Singular Lagrangian systems on jet bundles, *Fortschr. Phys.* 50 (2002) 105-169
 19. M. Krbek, The Representation of the Variational Sequence by Forms, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
 20. O. Krupkova, Hamiltonian field theory, *J. Geom. Phys.* 43 (2002) 93-132
 21. D. Smetanova, The Regularity Problem in the Calculus of Variations, PhD Dissertation, Palacky University Olomouc, Faculty of Science, 2003
 22. D. Smetanova, On regularization of second order Lagrangians, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 289-296
 23. P. Volný, Nonholonomic systems, PhD Thesis, Palacký University, Olomouc, 2005.
 24. O. Krupkova, P. Volny, Euler-Lagrange and Hamilton equations for non-holonomic systems in field theory, *J. Phys. A-Math. Gen.* 38 (2006) 8715-8745
 25. D. Smetanová, J. Volná, P. Volný, Variational principles on fibred manifolds (in Czech), In Proceedings of the Workshop "Matematika na vysokých školách" (Union on Czech Mathematicians and Physicists & Technical University in Prague, Prague, 2007) 109-112, ISBN 978-80-01-03773-7.
 26. O. Krupkova, Lepage forms in the calculus of variations, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 27-55
 27. A. Fernandes, P.L. Garcia, Lepage congruences in discrete mechanics, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 85-97
 28. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
 29. M.J. Gotay and J.E. Marsden, *Momentum Maps and Classical Fields*, Lecture Notes, 14th Int. Summer School on Glob. Anal. and Math. Phys., Olomouc, 2009, Satellite Conf. of XVI Int. Congress on Math. Phys., Prague, 2009, 271 pp.
 30. E. Rosado Maria, J. Munoz Masque, Integrability of second-order Lagrangians admitting a first-order Hamiltonian formalism, *Differential Geometry and its Applications* 09 (2014), DOI: 10.1016/j.difgeo.2014.04.006

[27] **D. Krupka, J. Musilova, Hamilton extremals in higher order mechanics, Arch. Math. 20 (1984) 21-30**

1. O. Stepankova, The local inverse problem of the calculus of variations in higher-order Hamiltonian mechanics, in D. Krupka, Ed., *Differential Geometry and its Applications*, Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 275-287
2. M. Crampin, W. Sarlet and F. Cantrijn, Higher order differential equations and higher order Lagrangian mechanics, *Math. Proc. Cambridge Phil. Soc.* 99 (1986) 565-587
3. O. Krupkova, Lepagean 2-forms in higher order Hamiltonian mechanics, I. Regu-

- larity, Arch. Math. 22 (1986) 97-120
4. L. Klapka, The problem of differentiable Poisson bracket of coordinates in mechanics, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications, Communications*, Proc. Conf. Vol. 2, Brno, Czechoslovakia, Aug. 1986; J.E. Purkyne Univ., Brno, 1987, 167-174
 5. A. Vondra, Semisprays, connections and regular equations in higher order mechanics, in J. Janyska, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1989; World Scientific, Singapore, 1990, 276-287
 6. M.J. Gotay, A multisymplectic framework for classical field theory and the calculus of variations, I. Covariant Hamiltonian formalism, in *Mechanics, Analysis and Geometry: 200 years after Lagrange*, North Holland, 1991, 203-235
 7. M.J. Gotay, An exterior differential systems approach to the Cartan form, Proc. Internat. Coll. "Geometrie Symplectique and Physique Mathematique", Birkhauser, 1991
 8. P.G. Henriques, Well-posed variational problem with mixed end point conditions, *Diff. Geom. Appl* 3 (1993) 373-393
 9. O. Krupkova, Liouville and Jacobi theorems for vector distributions, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 75-87
 10. O. Krupkova, *A Geometric Theory of Variational Ordinary Differential Equations*, Assoc. Prof. Dissertation, Silesian Univ., Opava, 1995, 165 pp.
 11. O. Krupkova, A new look at Dirac's theory of constrained systems, in *Gravity, Particles and Space-time*, World Scientific, 1996, 507-517
 12. O. Krupkova, Symmetries and first integrals of time-dependent higher-order constrained systems, *J. Geom. Phys.* 18 (1996) 38-58
 13. G.B. Byrnes, A linear connection for higher order ordinary differential equations, *J. Phys. A-Math. Gen.* 29 (1996) 1685-1694
 14. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
 15. P. Volny, O. Krupkova, Hamilton equations for non-holonomic systems, in *Differential Geometry and Its Applications*, Proc. Conf., Opava, Czech Republic, 2001, O. Kowalski, D. Krupka, J. Slovak, Eds.; Silesian University Opava, 2001, 369-380
 16. O. Krupkova, Lepage forms in the calculus of variations, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 27-55
 17. O. Krupkova, D.J. Saunders, Affine duality and Lagrangian and Hamiltonian systems, *Internat. J. of Geom. Methods in Modern Phys.* 8 (2011) 669-697
- [28] **D. Krupka, On the higher order Hamilton theory in fibered spaces, in Differential Geometry and its Applications, D. Krupka, Ed., Proc. Conf. Vol. 2, Nove Mesto na Morave, Czechoslovakia, Sept. 1983; J.E. Purkyne Univ., Brno, 1984, 167-184**
1. O. Krupkova, Lepagean 2-forms in higher order Hamiltonian mechanics, I. Regularity, Arch. Math. 22 (1986) 97-120
 2. J. Chrastina, Another approach to the classical calculus of variations III, Arch. Math. 23 (1987) 131-146
 3. J. Chrastina, Recent results on formal calculus of variations and formal theory of differential equations, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications, Communications*, Proc. Conf. Vol. 2, Brno, Czechoslovakia, Aug. 1986; J.E. Purkyne Univ., Brno, 1987, 243-269
 4. M. de Leon, P.R. Rodrigues, A contribution to the global formulation of the higher order Poincare-Cartan form, *Letters in Math. Phys.* 14 (1987) 353-362

5. T. Harding, *Connections, the Poincare-Cartan form and the Hochschild cohomology of operators*, PhD Dissertation, Univ. of Liverpool, U. K., 1990
 6. M. Ferraris, M. Francaviglia, The Lagrangian approach to conserved quantities in general relativity, in *Mechanics, Analysis and Geometry: 200 years after Lagrange*, North Holland, 1991, 451-488
 7. O. Krupkova, *Variational Analysis on Fibered Manifolds Over 1-dimensional Bases*, PhD (CSc) Dissertation, Silesian Univ., Opava, 1992
 8. D. Betounes, Global shift operators and the higher order calculus of variations, *Journ. Geom. Phys.* 10 (1993) 185-201
 9. O. Krupkova, A Geometric Theory of Variational Ordinary Differential Equations, Assoc. Prof. Dissertation, Silesian Univ., Opava, 1995, 165 pp.
 10. A. Vondra, *Towards a geometry of higher order partial differential equations represented by connections on fibered manifolds*, Assoc. Prof. (Doc.) Dissertation, Military Academy, Brno, Czech Republic, 1995
 11. A. Vondra, Prolongations and fields of paths for higher-order ODE represented by connections on a fibered manifold, *Extracta Math.* 1 (1996) 229-242
 12. O. Krupkova, The Geometry of Ordinary Variational Equations, *Lecture Notes in Math.* 1678, Springer, Berlin, 1997
 13. M. Ferraris, M. Francaviglia, M. Raiteri, Dual Lagrangian field theories, *J. Math. Phys.* 41 (2000) 1889-1915
 14. A. Vondra, Higher-Order Differential Equations Represented by Connections on Prolongations of a Fibered Manifold, *Extracta Mathematicae* 15 (2000) 421-512
 15. O. Krupkova, Hamilton field theory revisited: A geometric approach to regularity, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 187-207
 16. D. Smetanova, On Hamilton p2-equations in second order field theory, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 329-341
 17. O. Krupkova, D. Smetanova, On regularization of variational problems in first-order field theory, *Rend. Circ. Mat. Palermo, Suppl.* 66 (2001) 133-140
 18. O. Krupkova, D. Smetanova, Legendre transformation for regularizable Lagrangians in field theory, *Lett. Math. Phys.* 58 (2001) 189-204
 19. O. Krupkova, Hamiltonian field theory, *J. Geom. Phys.* 43 (2002) 93-132
 20. D. Smetanova, *The Regularity Problem in the Calculus of Variations*, PhD Dissertation, Palacky University Olomouc, Faculty of Science, 2003
 21. D. Smetanova, On regularization of second order Lagrangians, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 289-296
 22. O. Krupkova, Partial differential equations with differential constraints, *J. Diff. Equations* 220 (2006) 354-395
 23. R.J. Alonso-Bianco, A.M. Vinogradov, Green formula and Legendre transformation, *Acta Appl. Math.* 83 (2004) 149-166
 24. O. Krupkova, Lepage forms in the calculus of variations, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 27-55
 25. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
 26. N. Roman-Roy, Multisymplectic Lagrangian and Hamiltonian formalism of classical field theories, *Sigma* 5 (2009), Article No. 100, 25 pp.
 27. L. Vitagliano, The Hamilton-Jacobi formalism for higher-order field theories, *Internat. J. of Geometric Methods in Modern Physics* 7 (2010) 1413-1436
- [29] D. Krupka, V. Mikolasova, On the uniqueness of some differential invariants, *Czechoslovak Math. J.* 34 (1984) 588-597

1. J. Janyska, Connections naturally induced from the metric tensor and its derivatives of finite order, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications*, Communications, Proc. Conf. Vol. 2, Brno, Czechoslovakia, Aug. 1986; J.E. Purkyne Univ., Brno, 1987, 143-156
2. I. Kolar, Some natural operators in differential geometry in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1986; Kluwer Academic Publishers, 1987, 91-110
3. O. Kowalski, M. Sekizawa, Natural transformations of Riemannian metrics on manifolds to metrics on tangent bundles - a classification, in D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1986; Kluwer Academic Publishers, 1987, 149-178
4. M. Sekizawa, Natural transformation of affine connections on manifolds to metrics on cotangent bundles, Proc. Conf. Srni, January 1986; Suppl. Rend. Circ. Mat. Palermo, Ser. II, No. 14 (1987) 129-142
5. P. Michor, Remarks on the Schouten-Nijenuis bracket, in Jarolím Bureš and Vladimír Souček (eds.): *Proceedings of the Winter School "Geometry and Physics"*. Circolo Matematico di Palermo, Palermo, 1987. Rendiconti del Circolo Matematico di Palermo, Serie II, Supplemento No. 16. pp. 207--215.
6. M. Sekizawa, Natural transformations of symmetric affine connections on manifolds to metrics on linear frame bundles: A classification, *Monatsh. Math.* 105 (1988) 229-243
7. M. Sekizawa, Natural transformations of vector fields on manifolds to vector fields on tangent bundles, *Tsukuba J. Math.* 12 (1988) 115-128
8. J. Slovak, On natural connections on Riemannian manifolds, *CMUC* 30 (1989) 389-393
9. J. Janyska, Remarks on the Nijenhuis tensor and almost complex connections, *Arch. Math.* 26 (1990) 229-240
10. A. Cap, All linear and bilinear natural concomitants of vector valued differential forms, *CMUC* 31 (1990) 567-587
11. I. Kolar, *Natural bundles and operators* (Russian), in *Itogi Nauki i Tekhniky*, Ser. Probl. Geom. 23, VINITI, Moscow, 1991, 67-98
12. J. Kurek, *Zastosowania operatorow naturalnych*, Wydawnictwo Uniw. M. Curie-Sklodowskiej, Lublin, 1992
13. P. Kobak, The structure of tensor and first order natural differential operators, *Arch. Math.* 28 (1992), 121-138
14. I. Kolar, P.W. Michor, J. Slovak, *Natural Operations in Differential Geometry*, Springer, Berlin-Heidelberg-New York, 1993
15. A. Cap, J. Slovak, On multilinear operators commuting with Lie derivatives, *Ann. Glob. Anal. and Geom.* 13 (1995) 251-279
16. M. Krupka, *Natural operators on vector fields and vector distributions*, PhD Dissertation, Faculty of Science, Masaryk Univ., Brno, 1995
17. V. Studeny, General Nijenhuis tensor an example of a secondary invariant, in In Jarolím Bureš and Vladimír Souček (eds.): *Proceedings of the Winter School "Geometry and Physics"*. Circolo Matematico di Palermo, Palermo, 1996. Rendiconti del Circolo Matematico di Palermo, Serie II, Supplemento No. 39. pp. 133-141.
18. M.D. Calvo, G.G.R. Keilhauer, Tensor fields of type (0,2) on the tangent bundle of a Riemannian manifold, *Geometriae Dedicata* 71 (1998) 209-219
19. D.R. Grigore, The variational sequence on finite jet bundle extensions and the Lagrangian formalism, *Diff. Geom. Appl.* 10 (1999) 43-77
20. O. Kowalski, M. Sekizawa, Invariance on g -natural metrics on tangent bundles, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 171-181
21. J. Janyska, Natural Lagrangian structures, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers,

- New York, 2008, 143-166
22. O. Kowalski, M. Sekizawa, Natural lifts in Riemannian geometry, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166
 23. M. Sekizawa, On Riemannian geometry of orthonormal frame bundles, *Note di Matematica* 28 (2008) 383-394
 24. O. Kowalski, M. Sekizawa, Invariance of g-natural metrics on linear frame bundles, *Arch. Math.* 44 (2008) 139-147
 25. J. Navarro Garmendia, Divergence-free tensors associated to a metric, PhD thesis, Universidad de Extremadura, 2013

[30] D. Krupka, A. Sattarov, The inverse problem of the calculus of variations for Finsler structures, *Math. Slovaca* 35 (1985) 217-222

1. O. Krupkova, Lepagean 2-forms in higher order Hamiltonian mechanics, II. Inverse problem, *Arch. Math.* 23 (1987) 155-170
2. M. Matsumoto, The inverse problem of variation calculus in two-dimensional Finsler spaces, *J. Math. Kyoto Univ.* 29 (1989) 489-496
3. A. Vondra, *Connections in the geometry of non-autonomous regular higher order dynamics*, PhD Dissertation, Military Academy, Brno, Czechoslovakia, 1991
4. O. Krupkova, Variational metrics on $RxTM$ and the geometry of nonconservative mechanics, *Math. Slovaca* 44 (1994) 315-335
5. O. Krupkova, *A Geometric Theory of Variational Ordinary Differential Equations*, Assoc. Prof. Dissertation, Silesian Univ., Opava, 1995, 165 pp.
6. O. Krupkova, Variational metric structures, *Publ. Math. Debrecen* 62 (2003) 461-495
7. L. Tamassy, Metrizability of affine connections, *Balkan J. of Geom. And Appl.* 1 (1996) 83-90
8. O. Krupkova, Helmholtz conditions in the geometry of SODEs, in F. Cantrijn, B. Langerock, Eds., *Differential Geometric Methods in Mechanics and Field Theory*, in Honour of W. Sarlet, Gent, Academia Press, 2007, 91-90
9. O. Krupkova, G.E. Prince, Second order ordinary differential equations in jet bundles and the inverse problem of the calculus of variations, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
10. W. Sarlet, Linear connections along the tangent bundle projection, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166
11. G.E. Prince, On the inverse problem for autoparallels, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166

[32] D. Krupka, Geometry of Lagrangean structures, 1. Odd base forms, *Arch. Math.* 22 (1986) 159-174

1. T. Harding, *Connections, the Poincare-Cartan form and the Hochschild cohomology of operators*, PhD Dissertation, Univ. of Liverpool, U. K., 1990
2. T.J. Harding, F.J. Bloore, A fresh approach to the Poincare-Cartan form for a linear P.D.E. and a map between cohomologies, in J. Janyška, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1989; World Scientific, Singapore, 1990, 220-229
3. M.J. Gotay, A multisymplectic framework for classical field theory and the calculus of variations, I. Covariant Hamiltonian formalism, in *Mechanics, Analysis and Geometry: 200 years after Lagrange*, North Holland, 1991, 203-235
4. A. Vondra, *Connections in the geometry of non-autonomous regular higher order*

- dynamics*, PhD Dissertation, Military Academy, Brno, Czechoslovakia, 1991
5. J. Stefanek, Odd variational sequences on finite order jet spaces, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 523-538
 6. J. Stefanek, *A representation of the variational sequence by forms*, PhD Dissertation, Silesian Univ., Opava, December 1995
 7. A. Vondra, *Towards a geometry of higher order partial differential equations represented by connections on fibered manifolds*, Assoc. Prof. (Doc.) Dissertation, Military Academy, Brno, Czech Republic, 1995
 8. V. Balan, Variational problems in the geometrized first order jet framework, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 91-98
 9. A. Spiro, Cohomology of Lagrange complexes invariant under pseudogroups of local transformations, *Internat. J. Geom. Methods in Modern Phys.* 4 (2007) 669-705
 10. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.

[33] D. Krupka, Geometry of Lagrangean structures 2. Differential forms on jet prolongations of fibered manifolds, Arch. Math. 22 (1986) 211-228

1. T. Harding, *Connections, the Poincare-Cartan form and the Hochschild cohomology of operators*, PhD Dissertation, Univ. of Liverpool, U. K., 1990
2. T.J. Harding, F.J. Bloore, A fresh approach to the Poincare-Cartan form for a linear P.D.E. and a map between cohomologies, in J. Janyska, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1989; World Scientific, Singapore, 1990, 220-229
3. M.J. Gotay, A multisymplectic framework for classical field theory and the calculus of variations, I. Covariant Hamiltonian formalism, in *Mechanics, Analysis and Geometry: 200 years after Lagrange*, North Holland, 1991, 203-235
4. A. Vondra, *Connections in the geometry of non-autonomous regular higher order dynamics*, PhD Dissertation, Military Academy, Brno, Czechoslovakia, 1991
5. O. Krupkova, *Variational Analysis on Fibered Manifolds Over 1-dimensional Bases*, PhD (CSc) Dissertation, Silesian Univ., Opava, 1992
6. Nong Quoc Chinh, *Sheaves of contact forms and acyclic resolutions on finite jet prolongations of a fibred manifold* (Svazky kontaktnich forem a acyklicke rezolventy na konecných jetových prodlouženích fibrovane variety, in Czech), PhD (CSc) Dissertation, Brno (Czechoslovakia), 1992, 50 pp.
7. O. Krupkova, Liouville and Jacobi theorems for vector distributions, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 75-87
8. O. Krupkova, On the inverse problem of the calculus of variations for ordinary differential equations, *Math. Bohemica* 118 (1993) 261-276
9. O. Krupkova, A. Vondra, On some integration methods for connections on fibered manifolds, in O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Proc. Conf. Part 2, Aug. 27-31, 2001, Opava, Czech Republic; Silesian University, Opava, 2003, 89-101
10. J. Stefanek, Odd variational sequences on finite order jet spaces, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 523-538
11. D. Chinea, M. de Leon, J.C. Marrero, The constraint algorithm for time-dependent Lagrangians, *J. Math. Phys.* 35 (1994) 3410-3447
12. O. Krupkova, Variational metrics on $R \times TM$ and the geometry of nonconservative mechanics, *Math. Slovaca* 44 (1994) 315-335
13. O. Krupkova, A geometric setting for higher-order Dirac-Bergmann theory of con-

- straints, *J. Math. Phys.* 35 (1994) 6557-6576
14. O. Krupkova, *A Geometric Theory of Variational Ordinary Differential Equations*, Assoc. Prof. Dissertation, Silesian Univ., Opava, 1995, 165 pp.
 15. J. Stefanek, *A representation of the variational sequence by forms*, PhD Dissertation, Silesian Univ., Opava, December 1995
 16. A. Vondra, *Towards a geometry of higher order partial differential equations represented by connections on fibered manifolds*, Assoc. Prof. (Doc.) Dissertation, Military Academy, Brno, Czech Republic, 1995
 17. O. Krupkova, Higher-order constrained systems on fibered manifolds: An exterior differential systems approach, in L. Tamassy, J. Szenthe, Eds., *New Developments in Differential Geometry*, Proc. Colloq. on Diff. Geom., Debrecen, Hungary, July 1994; Kluwer Academic Publishers, Dordrecht, 1996, 255-278
 18. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
 19. O. Krupkova, Noether theorem and first integrals of constrained lagrangean systems, *Math. Bohemica* 122 (1997) 257-265
 20. A. Vondra, Higher-Order Differential Equations Represented by Connections on Prolongations of a Fibered Manifold, *Extracta Mathematicae* 15 (2000) 421-512
 21. O. Krupkova, Differential systems in higher order mechanics, in D. Krupka, Ed., *Proceedings of the Seminar on Differential Geometry*, Silesian Univ., Opava, Czech Republic, 2000, 87-130
 22. O. Krupkova, Hamilton field theory revisited: A geometric approach to regularity, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 187-207
 23. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
 24. O. Krupkova, Hamiltonian field theory, *J. Geom. Phys.* 43 (2002) 93-132
 25. V. Balan, Variational problems in the geometrized first order jet framework, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 91-98
 26. J. Musilova, M. Lenc, Lepage forms in variational theories: From Lepage's idea to the variational sequence, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 3-26
 27. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
- [34] **D. Krupka, Geometry of Lagrangean structures 3. Lepagean forms and the first variation, in Proc. 14th Winter School on Abstract Analysis, Srni, Czech Rep., Jan. 1986, Suppl. Rend. del. Circolo Mat. di Palermo, Ser. II, 1987, 187-224**
1. T. Harding, Connections, the Poincare-Cartan form and the Hochschild *cohomology of operators*, PhD Dissertation, Univ. of Liverpool, U. K., 1990
 2. T.J. Harding, F.J. Bloore, A fresh approach to the Poincare-Cartan form for a linear P.D.E. and a map between cohomologies, in J. Janyska, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1989; World Scientific, Singapore, 1990, 220-229
 3. M.J. Gotay, A multisymplectic framework for classical field theory and the calculus of variations, I. Covariant Hamiltonian formalism, in *Mechanics, Analysis and Geometry: 200 years after Lagrange*, North Holland, 1991, 203-235
 4. M.J. Gotay, An exterior differential systems approach to the Cartan form, Proc. Internat. Coll. "Geometrie Symplectique and Physique Mathematique", Birkhauser, 1991
 5. O. Krupkova, *Variational Analysis on Fibered Manifolds Over 1-dimensional Ba-*

- ses, PhD (CSc) Dissertation, Silesian Univ., Opava, 1992
6. O. Krupkova, On the inverse problem of the calculus of variations for ordinary differential equations, *Math. Bohemica* 118 (1993) 261-276
 7. O. Krupkova, A. Vondra, On some integration methods for connections on fibered manifolds, in O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Proc. Conf. Part 2, Aug. 27-31, 2001, Opava, Czech Republic; Silesian University, Opava, 2003, 89-101
 8. J. Stefanek, Odd variational sequences on finite order jet spaces, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 523-538
 9. D. Chinea, M. de Leon, J.C. Marrero, The constraint algorithm for time-dependent Lagrangians, *J. Math. Phys.* 35 (1994) 3410-3447
 10. O. Krupkova, Variational metrics on $RxTM$ and the geometry of nonconservative mechanics, *Math. Slovaca* 44 (1994) 315-335
 11. O. Krupkova, A geometric setting for higher-order Dirac-Bergmann theory of constraints, *J. Math. Phys.* 35 (1994) 6557-6576
 12. O. Krupkova, *A Geometric Theory of Variational Ordinary Differential Equations*, Assoc. Prof. Dissertation, Silesian Univ., Opava, 1995, 165 pp.
 13. J. Stefanek, *A representation of the variational sequence by forms*, PhD Dissertation, Silesian Univ., Opava, December 1995
 14. O. Krupkova, Higher-order constrained systems on fibered manifolds: An exterior differential systems approach, in L. Tamassy, J. Szenthe, Eds., *New Developments in Differential Geometry*, Proc. Colloq. on Diff. Geom., Debrecen, Hungary, July 1994; Kluwer Academic Publishers, Dordrecht, 1996, 255-278
 15. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
 16. D.R. Grigore, Fock space methods and the lagrangian formalism on finite jet bundle extensions, *Differential Geometry and Applications*, Proc. Conf., Edited by I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Brno, August 1998; Masaryk Univ., Brno, Czech Republic, 1999, 469-468
 17. D.R. Grigore, The variational sequence on finite jet bundle extensions and the Lagrangian formalism, *Diff. Geom. Appl.* 10 (1999) 43-77
 18. D.R. Grigore, Variationally trivial lagrangians and locally variational differential equations of arbitrary order, *Diff. Geom. Appl.* 10 (1999) 79-105
 19. A. Echeveria-Enriques, M.C. Munoz-Lecanda, N. Roman-Roy, On the multi-momentum bundles and the Legendre map in field theories, *Rep. Math. Phys.* 45 (2000) 85-105
 20. R. Fernandes, P.L. Garcia, C. Rodrigo, Stress-energy-momentum tensors in higher order variational calculus, *J. Geom. Phys.* 34 (2000) 41-72
 21. O. Krupkova, Differential systems in higher order mechanics, in D. Krupka, Ed., *Proceedings of the Seminar on Differential Geometry*, Silesian Univ., Opava, Czech Republic, 2000, 87-130
 22. O. Krupkova, Hamilton field theory revisited: A geometric approach to regularity, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 187-207
 23. I.V. Kanatchikov, Precanonical quantum gravity: Quantization without the space-time decomposition, *Int. J. Theoret. Phys.* 40 (2001) 1121-1149
 24. I.V. Kanatchikov, Precanonical quantization and the Schrödinger wave functional, *Phys. Lett. A* 283 (2001) 25-36
 25. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
 26. O. Krupkova, Hamiltonian field theory, *J. Geom. Phys.* 43 (2002) 93-132
 27. A. Spiro, Cohomology of Lagrange complexes invariant under pseudogroups of local transformations, *Internat. J. Geom. Methods in Modern Phys.* 4 (2007) 669-705
 28. J. Musilova, M. Lenc, Lepage forms in variational theories: From Lepage's idea to

- the variational sequence, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 3-26
29. D.R. Grigore, On a generalization of the Poincare-Cartan form in higher-order field theory, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 57-76
 30. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.

[35] D. Krupka, Regular Lagrangians and Lepagean forms, in D. Krupka, A. Svec, Eds., Differential Geometry and its Applications, Proc. Conf., Brno, Czechoslovakia, Aug. 1986; Math. Appl., East Eur. Series 27, Reidel, Dordrecht, 1987, 111-148

1. A. Borowiec, Remarks on globalization of the lagrangian formalism, in J. Janyska, D. Krupka, Eds., *Differential Geometry and its Applications, Proc. Conf., Brno, Czechoslovakia, Aug. 1989*; World Scientific, Singapore, 1990, 200-202
2. T.J. Harding, F.J. Bloore, *A fresh approach to the Poincare-Cartan form for a linear P.D.E. and a map between cohomologies*, in J. Janyska, D. Krupka, Eds., *Differential Geometry and its Applications, Proc. Conf., Brno, Czechoslovakia, Aug. 1989*; World Scientific, Singapore, 1990, 220-229
3. D. Saunders, M. Crampin, On the Legendre map in higher-order field theories, *J. Phys. A-Math. Gen.* 23 (1990) 3169-3182
4. M.J. Gotay, A multisymplectic framework for classical field theory and the calculus of variations, I. Covariant Hamiltonian formalism, in *Mechanics, Analysis and Geometry: 200 years after Lagrange*, North Holland, 1991, 203-235
5. P. Horava, On a covariant Hamilton-Jacobi framework for the Einstein-Maxwell theory, *Classical Quant. Grav.* 8 (1991) 2069-2084
6. A. Vondra, *Connections in the geometry of non-autonomous regular higher order dynamics*, PhD Dissertation, Military Academy, Brno, Czechoslovakia, 1991
7. O. Krupkova, *Variational Analysis on Fibered Manifolds Over 1-dimensional Bases*, PhD (CSc) Dissertation, Silesian Univ., Opava, 1992
8. D.J. Saunders, The regularity of variational problems, *Contemporary Mathematics* 132, 1992, 573-593
9. D. Betounes, Global shift operators and the higher order calculus of variations, *Journ. Geom. Phys.* 10 (1993) 185-201
10. G.A. Sardanashvily, *Gauge Theory in Jet Manifolds*, Hadronic Press, 1993
11. O. Krupkova, *A Geometric Theory of Variational Ordinary Differential Equations*, Assoc. Prof. Dissertation, Silesian Univ., Opava, 1995, 165 pp.
12. J. Stefanek, *A representation of the variational sequence by forms*, PhD Dissertation, Silesian Univ., Opava, December 1995
13. G. Sardanashvily, *Generalized Hamiltonian Formalism for Field Theory*, World Scientific, Singapore, 1995
14. G. Giachetta and G. Sardanashvily, Energy-momentum superpotential in gravitation theory, in *Gravity, Particles and Space-time*, World Scientific, 1996, 471-506
15. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
16. G. Giachetta, L. Mangiarotti, G. Sardanashvily, *New Lagrangian and Hamiltonian Methods in Field Theory*, World Scientific, Singapore, 1997
17. O. Krupkova, Hamilton field theory revisited: A geometric approach to regularity, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 187-207
18. D. Smetanova, On Hamilton p2-equations in second order field theory, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 329-341

19. I.V. Kanatchikov, Precanonical quantum gravity: Quantization without the space-time decomposition, *Int. J. Theoret. Phys.* 40 (2001) 1121-1149
20. O. Krupkova, D. Smetanova, On regularization of variational problems in first-order field theory, *Rend. Circ. Mat. Palermo, Suppl.* 66 (2001) 133-140
21. L. Fatibene, M. Francaviglia, M. Raiteri, Gauge natural field theories and applications to conservation laws, in *Differential Geometry and Its Applications*, Proc. Conf., Opava, Czech Republic, 2001, O. Kowalski, D. Krupka, J. Slovak, Eds.; Silesian University Opava, 2001, 401-413
22. M. Krbek, The Representation of the Variational Sequence by Forms, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
23. O. Krupkova, Hamiltonian field theory, *J. Geom. Phys.* 43 (2002) 93-132
24. D. Smetanova, The Regularity Problem in the Calculus of Variations, PhD Dissertation, Palacky University Olomouc, Faculty of Science, 2003
25. A. Echeverria-Enriques, J. Marin-Solano, M.C. Munoz-Lecanda, et al., On the construction of K-operators in field theories as sections along Legendre maps, *Acta Appl. Math.* 77 (2003) 1-40
26. L. Fatibene, M. Ferraris, M. Francaviglia, On the gauge-natural structure of modern physics, *Internat. J. Geom. Methods in Modern Phys.* 1 (2004) 443-466
27. D. Smetanova, On regularization of second order Lagrangians, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 289-296
28. A. Echeverria-Enriques, M. de Leon, M.C. Munoz-Lecanda, et al., Hamiltonian systems in multisymplectic field theories, *J. Math. Phys.* 48 (2007), Article No. 12901
29. J. Musilova, M. Lenc, Lepage forms in variational theories: From Lepage's idea to the variational sequence, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 3-26
30. O. Krupkova, Lepage forms in the calculus of variations, in O. Krupkova, D. Saunders, *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 27-55
31. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
32. N. Roman-Roy, Multisymplectic Lagrangian and Hamiltonian formalism of classical field theories, *Sigma* 5 (2009), Article No. 100, 25 pp.
33. X. Gracia, R. Martin, N. Roman-Roy, Constraint algorithm for k-presymplectic Hamiltonian systems: Application to singular field theories, *Internat. J. Geom. Methods in Modern Phys.* 6 (2009) 851-872

[36] D. Krupka, Variational sequences on finite order jet spaces, in J. Janyska, D. Krupka, Eds., Differential Geometry and its Applications, Proc. Conf., Brno, Czechoslovakia, Aug. 1989; World Scientific, Singapore, 1990, 236-254

1. O. Krupkova, *Variational Analysis on Fibered Manifolds Over 1-dimensional Bases*, PhD (CSc) Dissertation, Silesian Univ., Opava, 1992
2. Nong Quoc Chinh, *Sheaves of contact forms and acyclic resolutions on finite jet prolongations of a fibred manifold* (Svazky kontaktnich forem a acyklicke rezolventy na konecných jetových prodlouženích fibrovane variety, in Czech), PhD (CSc) Dissertation, Brno (Czechoslovakia), 1992, 50 pp.
- x 3. M. Ferraris, M. Francaviglia, V. Tapia, Global D-invariance in field theory, *J. Phys. A-Math. Gen.* 26 (1993) 433-442
4. O. Krupkova, On the inverse problem of the calculus of variations for ordinary differential equations, *Math. Bohemica* 118 (1993) 261-276
5. J. Novotny, On the energy-momentum complex of gravitational field in the Palati-

- ni formalism, *Internat. J. Theoret. Phys.* 32 (1993) 1033-1039
6. J. Stefanek, Odd variational sequences on finite order jet spaces, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications, Proc. Conf.*, Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 523-538
 7. J.F. Pommaret, *Partial Differential Equations and Group Theory*, Kluwer, 1994
 8. O. Krupkova, *A Geometric Theory of Variational Ordinary Differential Equations*, Assoc. Prof. Dissertation, Silesian Univ., Opava, 1995, 165 pp.
 9. J.F. Pommaret, Differential sequences and variational calculus, *C. R. Acad. Sci. Paris* 320, Serie I - Mathematique (1995) 207-212
 10. J.F. Pommaret, Spencer sequence and variational sequence, *Acta Appl. Math.* 41 (1995) 285-296
 11. J. Stefanek, *A representation of the variational sequence by forms*, PhD Dissertation, Silesian Univ., Opava, December 1995
 12. J. Musilova, Variational sequence in higher order mechanics, in J. Janyska, I. Kolar, J. Slovak, Eds., *Differential Geometry and its Applications, Proc. Conf.*, Brno, 1995; Masaryk Univ., Brno, 1996, 611-624
 13. J. Stefanek, A representation of the variational sequence in higher order mechanics, in J. Janyska, I. Kolar, J. Slovak, Eds., *Differential Geometry and its Applications, Proc. Conf.*, Brno, 1995; Masaryk Univ., Brno, 1996, 487-494
 14. R. Vitolo, *Bicompleksi Lagrangiani ed applicazioni alla meccanica relativistica classica e quantistica*, Tesi di Dottorato in Matematica, Universita di Firenze, 1996, 175 pp.
 15. R. Vitolo, Some aspects of variational sequences in mechanics, in J. Janyska, I. Kolar, J. Slovak, Eds., *Differential Geometry and its Applications, Proc. Conf.*, Brno, 1995; Masaryk Univ., Brno, 1996, 487-494
 16. M. Modugno, R. Vitolo, Quantum connection and Poincare-Caeran form, in *Gravitation, electromagnetism and geometric structures*, G. Ferrarese, Ed., Pitagora, Bologna, 1996, 237-279
 17. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
 18. O. Krupkova, Mechanical systems with nonholonomic constraints, *J. Math. Phys.* 38 (1997) 5098-5126
 19. G. Giachetta, L. Mangiarotti, G. Sardanashvily, *New Lagrangian and Hamiltonian Methods in Field Theory*, World Scientific, Singapore, 1997
 20. R. Vitolo, A new infinite order formulation of variational sequences, *Arch. Math.* 34 (1998) 483-504
 21. M. Modugno, On covariant formulation of quantum mechanics, in Proc. 2nd Internat. Workshop "Lie theory and Its Applications in Physics", Aug. 17-20, 1997, Clausthal, H.-D. Doebner, V.K. Debreu and J. Hilgert, Eds., World Scientific, 1998, 183-203
 22. R.J. Alonso, Decomposition of higher order tangent fields and calculus of variations, in *Differential Geometry and its Applications*, I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 451-460
 23. M. Francaviglia, M. Palese, R. Vitolo, Superpotentials in variational sequences, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 469-468
 24. D.R. Grigore, Fock space methods and the lagrangian formalism on finite jet bundle extensions, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 469-468
 25. D.R. Grigore, The variational sequence on finite jet bundle extensions and the Lagrangian formalism, *Diff. Geom. Appl.* 10 (1999) 43-77
 26. D.R. Grigore, Variationally trivial lagrangians and locally variational differential equations of arbitrary order, *Diff. Geom. Appl.* 10 (1999) 79-105

27. J. Kasparova, A representation of the 1st order variational sequence in field theory, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 469-468
28. J. Musilova, M. Krbek. A note to the representation of the variational sequence in mechanics, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 511-523
29. O. Krupkova, The geometry of non-holonomic mechanical systems, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 469-468
30. R. Vitolo, On different geometric formulations of Lagrangian formalism, *Diff. Geom. Appl.* 10 (1999) 225-255
31. R. Vitolo, Finite order variational bicomplexes, *Math. Proc. Cambridge Phil. Soc.* 125 (1999) 321-333
32. O. Krupkova, Higher order mechanical systems with constraints, *J. Math. Phys.* 41 (2000) 5304-5324
33. D. Saller, R. Vitolo, Symmetries in covariant classical mechanics, *J. Math. Phys.* 41 (2000) 6824-6842
34. O. Krupkova, Differential systems in higher order mechanics, in *Proceedings of the Seminar on Differential Geometry*, D. Krupka, Ed., Silesian Univ., Opava, Czech Republic, 2000, 87-130
35. M. Modugno, C.T. Prieto and R. Vitolo, Comparison between quometric quantisation and covariant quantum mechanics, in *Lie Theory and Its Applications in Physics III*, H. Doebner, V. Debrev, Eds., World Scientific, Singapore, 2000, 155-17
36. M. Francaviglia, M. Palese, Second order variations in variational sequences, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 119-130
37. M. Krbek, J. Musilova, J. Kasparova, Representation of the variational sequence in field theory, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 147-160
38. L. Fatibene, M. Francaviglia, M. Palese, Conservation laws and variational sequences in gauge-natural theories, *Math. Proc. Cambridge* 130 (2001) 555-569
39. G. Giachetta, L. Mangiarotti, G. Sardanashvily, Cohomology of the infinite jet space and the inverse problem, *J. Math. Phys.* 42 (2001) 4272-4282
40. L. Fatibene, M. Francaviglia, M. Raiteri, Gauge natural field theories and applications to conservation laws, in *Differential Geometry and Its Applications*, Proc. Conf., Opava, Czech Republic, 2001, O. Kowalski, D. Krupka, J. Slovak, Eds.; Silesian University Opava, 2001, 401-413
41. G. Manno, R. Vitolo, Variational sequences on finite order jets of submanifolds, in *Differential Geometry and Its Applications*, Proc. Conf., Opava, Czech Republic, 2001, O. Kowalski, D. Krupka, J. Slovak, Eds.; Silesian University Opava, 2001, 435-446
42. C.T. Prieto, Variational problems defined by local data, in *Differential Geometry and Its Applications*, Proc. Conf., Opava, Czech Republic, 2001, O. Kowalski, D. Krupka, J. Slovak, Eds.; Silesian University Opava, 2001, 473- 483
43. M. Francaviglia, M. Palese, R. Vitolo, Symmetries in finite order variational sequences, *Czechoslovak Math. J.* 52 (2002) 197-213
44. R. Vitolo, Finite-order formulation of Vinogradov's C-spectral sequence, *Acta Appl. Math.* 72 (2002) 133-154
45. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
46. O. Krupkova, Hamiltonian field theory, *J. Geom. Phys.* 43 (2002) 93-132
47. G. Sardanashvily, Cohomology of the variational complex in the class of exterior

- forms of finite order, *IJMMS* 30 (2002) 39-47
48. J. Sedenkova, On the invariant variational sequences in mechanics, *Rendiconti Del Circ. Mat. Palermo, Serie II, Suppl.* 71 (2003) 185-190
 49. A. Hakova, O. Krupkova, Variational first-order partial differential equations, *J. Differential Equations* 191 (2003) 67-89
 50. M. Krbek, J. Musilova, Representation of the variational sequence, *Rep. Math. Phys.* 51 (2003) 251-258
 51. I. Kolar, R. Vitolo., On the Helmholtz operator for Euler morphism, *Math. Proc. Cambridge Phil. Soc.* 135 (2003) 277-290
 52. M. Palese, E. Winterroth, Covariant gauge-natural conservation laws, *Rep. Math. Phys.* 54 (2004) 349-364
 53. O. Krupkova, The geometry of variational equations, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 19-38
 54. J. Sedenkova, A generalization of Lepage forms in mechanics, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 281- 288
 55. C.T. Prieto, Variational formulation of Chern-Simmons theory for arbitrary Lie groups, *J. Geom. Phys.* 50 (2004) 138-161
 56. L. Fatibene, M. Ferraris, M. Francaviglia, On the gauge-natural structure of modern physics, *Internat. J. Geom. Methods in Modern Phys.* 1 (2004) 443-466
 57. R. Vitolo, G. Saccomandi, Null Lagrangians for nematic elastomers, *Fundamentalnaya i prikladnaya matematika*, vol. 10 (2004), no. 1, pp. 17—28 (translation in *Journal of Mathematical Sciences* 136 (2006), 4470-4476
 58. M. Francaviglia, M. Palese, R. Vitolo, The Hessian and Jacobi morphisms for higher-order calculus of variations, *Diff. Geom. Appl.* 22 (2005) 105-120
 59. M. Francaviglia, M. Palese, E. Winterroth, Second variational derivative of gauge-natural invariant Lagrangians and conservation laws, in J. Bures, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and Its Applications*, Proc. Conf., Prague, Aug. 2004: Charles University in Prague, Czech Republic, 2005, 644 pp.
 60. J. Brajercik, Higher order invariant variational principles on frame bundles, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2005, 58 pp.
 61. M. Francaviglia, M. Palese, E. Winterroth, A general geometric setting for the energy of the gravitational field, in O. Clufoini et al, Eds., *Proc. 15th SIGRAV Conf.*, Inst. Phys. Conf. Ser. 176, Taylor and Francis 2005, 391-395
 62. M. Francaviglia, M. Palese, E. Winterroth, Generalised Bianchi identities in gauge-natural field theories and the curvature of variational principles, *Rep. Math. Phys.* 56 (2005) 11-22
 63. M. Krbek, J. Musilova, Representation of the variational sequence by differential forms, *Acta Appl. Math.* 88 (2005) 177-199
 64. M. Palese, E. Winterroth, Global generalized Bianchi identities for invariant variational problems on gauge-natural bundles, *Arch. Math.* (Brno) 41 (2005) 289-310
 65. Nong Quoc Chinh, A presentation of elements of the quotient sheaves in variational sequences, *Vietnam J. Math.* 33 (2005) 271-281
 66. A. Spiro, Cohomology of Lagrange complexes invariant under pseudogroups of local transformations, *Internat. J. Geom. Methods in Modern Phys.* 4 (2007) 669-705
 67. O. Krupkova, Helmholtz conditions in the geometry of SODEs, in F. Cantrijn, B. Langerock, Eds., *Differential Geometric Methods in Mechanics and Field Theory*, Volume in Honour of W. Sarlet, Gent, Academia Press, 2007, 91-90
 68. D. Saunders, How to recover a Lagrangian using the homogeneous variational bi-complex, in F. Cantrijn, B. Langerock, Eds., *Differential Geometric Methods in Mechanics and Field Theory*, in Honour of W. Sarlet, Gent, Academia Press, 2007, 91-90
 69. M. Palese, E. Winterroth, Lagrangian reductive structures in gauge-natural field

- theories, *Rep. Math. Phys.* 62 (2008) 229-239
70. G. Manno, R. Vitolo, Geometric aspects of higher-order variational principles on submanifolds, *Acta Appl. Math.* 101 (2008) 216-229
 71. M. Palese, E. Winterroth, The relation between the Jacobi morphism and the Hessian in gauge-natural field theories, *Theoret. and Math. Phys.* 152 (2008) 1191-1200
 72. M. Ferraris, M. Francaviglia, M. Palese, E. Winterroth, Canonical connections in gauge-natural field theories, *Internat. J. Geom. Methods in Modern Phys.* 6 (2008) 973-988
 73. D.R. Grigore, Lagrangian formalism on Grassmann manifolds, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 74. O. Krupkova, G.E. Prince, Second order ordinary differential equations in jet bundles and the inverse problem of the calculus of variations, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 75. R. Vitolo, Variational sequences, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 76. M. Palese, E. Winterroth, Noether identities in Eistein-Dirac theory and the Lie derivative of spinor fields, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 643-653
 77. J. Musilova, M. Lenc, Lepage forms in variational theories: From Lepage's idea to the variational sequence, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 3-26
 78. O. Krupkova, Lepage forms in the calculus of variations, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 27-55
 79. D.R. Grigore, On a generalization of the Poincare-Cartan form in higher-order field theory, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 57-76
 80. R. Vitolo, Finite order variational sequences: A short review, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 99-115
 81. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
 82. M. Crampin, D.J. Saunders, Homotopy operators for the variational bicomplex, representations of the Euler-Lagrange complex, and the Helmholtz-Sonin conditions, *Lobachevskii J. Math.* 30 (2009) 107-123
 83. D. Saunders, Homogeneous variational complexes and bicomplexes, *J. Geom. Phys.* 59 (2009) 727-739
 84. M. Palese, R. Vitolo, On a class of polynomial Lagrangians, *Rend. Circ. Mat. Palermo (2) Suppl.* 66 (2010) 147-159
 85. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
 86. Marcella Palese and Ekkehart Winterroth, Symmetries of Helmholtz forms and globally variational dynamical forms, *Journal of Physics: Conference Series* 343 (2012) 012129, doi:10.1088/1742-6596/343/1/012129, 1-4
 87. G. Giachetta, L. Mangiarotti, G. Sardanashvily, *Advanced Classical Field Theory*, World Scientific, 2009
 88. M. Francaviglia, M. Palese, E. Winterroth, Locally variational invariant field equations and global currents: Chern-Simmons theories, *Communications in Mathematics* 20 (2012) 13-22
 89. O. Krupkova, R. Malikova, Helmholtz conditions and their generalizations, *Balkan Journal of Geometry and Its Applications*, Vol.15, No.1, 2010, pp. 80-89
 90. M. Ferraris, M. Palese, E. Winterroth, Local variational problems and conserva-

- tion laws, *Diff. Geom. Appl.* 29 (2011) S80-S85
91. M. Palese, E. Winterroth, Variational Lie derivative and cohomology classes, *AIP Conference Proceedings* 1360, Ed.: Herdeiro, C; Picken, R (2011) 106-112
 92. R. Malikova, Galilei invariance and the Helmholtz morphism, *Miskolc Mathematical Notes* 14 (2013) 671-677
 93. M. Francaviglia, M. Palese and E. Winterroth, Cohomological obstructions in locally variational field theories, in *XXIst International Conference on Integrable Systems and Quantum Symmetries*, *Journal of Physics*, Conference Series 474 (2013) 012017, doi:10.1088/1742-6596/474/1/012017
 94. Z. Urban, Variational classes and mappings in the second order variational sequence: Explicit formulas (in Czech), *Kvaternion* 2 (2013) 69-81
 95. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6
 96. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
 97. Volna, J., Urban, Z., The interior Euler-Lagrange operator in field theory, *Math. Slovaca* 65 (2015) 1427-1444
 98. M. Palese, E. Winterroth, in Lagrangian field theories, with application to 3D Chern-Simons gauge theory, *Journal of Mathematical Physics* 58 (2), August 2016; DOI: 10.1063/1.4975336
 99. G. Moreno, M.E. Stypa, Natural boundary conditions in geometric calculus of variations, *Math. Slovaca* 65 (2015), DOI: <https://doi.org/10.1515/ms-2015-0105>
 100. Cattafi, F., Palese, M., Winterroth, E., Variational derivatives in locally Lagrangian field theories and Noether-Bessel-Hagen currents, *Internat. J. Geom. Methods in Modern Physics* 13 (2016), DOI: 10.1142/S0219887816500675
 101. M. Palese, O. Rossi, E. Winterroth, J. Musilova, Variational sequences, representation sequences and applications in physics, *Sigma* 12 (2016) 045, 45 pp.; <http://dx.doi.org/10.3842/SIGMA.2016.045>

[37] **D. Krupka, Topics in the calculus of variations: Finite order variational sequences, in O. Kowalski, D. Krupka, Eds., *Differential Geometry and its Applications*, Proc. Conf., Opava, Czechoslovakia, Aug. 1992; Silesian Univ., Opava, 1993, 473-495**

1. J.F. Pommaret, *Partial Differential Equations and Group Theory*, Kluwer, 1994
2. J.F. Pommaret, *Differential sequences and variational calculus*, C. R. Acad. Sci. Paris 320, Serie I - Mathematique (1995) 207-212
3. J.F. Pommaret, Spencer sequence and variational sequence, *Acta Appl. Math.* 41 (1995) 285-296
4. J. Stefanek, *A representation of the variational sequence by forms*, PhD Dissertation, Silesian Univ., Opava, December 1995
5. R. Vitolo, *Bicomplexi Lagrangiani ed applicazioni alla meccanica relativistica classica e quantistica*, Tesi di Dottorato in Matematica, Universita di Firenze, 1996, 175 pp.
6. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
7. G. Giachetta, L. Mangiarotti, G. Sardanashvily, *New Lagrangian and Hamiltonian Methods in Field Theory*, World Scientific, Singapore, 1997
8. R. Vitolo, A new infinite order formulation of variational sequences, *Arch. Math.* 34 (1998) 483-504
9. L. Lakoma, J. Mikes, L. Mikusova, The decomposition of tensor spaces, *Differential Geometry and Applications*, Proc. Conf., Edited by I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Brno, August 1998; Masaryk Univ., Brno, Czech Republic,

- 1999, 371-378
10. M. Francaviglia, M. Palese, R. Vitolo, Superpotentials in variational sequences, *Differential Geometry and Applications*, Proc. Conf., Edited by I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Brno, August 1998; Masaryk Univ., Brno, Czech Republic, 1999, 469-468
 11. D.R. Grigore, Fock space methods and the lagrangian formalism on finite jet bundle extensions, *Differential Geometry and Applications*, Proc. Conf., Edited by I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Brno, August 1998; Masaryk Univ., Brno, Czech Republic, 1999, 469-468
 12. D.R. Grigore, The variational sequence on finite jet bundle extensions and the Lagrangian formalism, *Diff. Geom. Appl.* 10 (1999) 43-77
 13. D.R. Grigore, Variationally trivial lagrangians and locally variational differential equations of arbitrary order, *Diff. Geom. Appl.* 10 (1999) 79-105
 14. D.R. Grigore, Trivial second order lagrangians in classical field theory, *Fortschr. Phys.* 47 (1999) 913-936
 15. J. Kasparova, A representation of the 1st order variational sequence in field theory, *Differential Geometry and Applications*, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 493-502
 16. J. Musilova, M. Krbek. A note to the representation of the variational sequence in mechanics, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 511-523
 17. R. Vitolo, Finite order variational bicomplexes, *Math. Proc. Cambridge Phil. Soc.* 125 (1999) 321-333
 18. M. Francaviglia, M. Palese, Second order variations in variational sequences, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 119-130
 19. M. Francaviglia, M. Palese, R. Vitolo, Symmetries in finite order variational sequences, *Czechoslovak Math. J.* 52 (2002) 197-213
 20. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
 21. M. Francaviglia, M. Palese, E. Winterroth, Generalised Bianchi identities in gauge-natural field theories and the curvature of variational principles, *Rep. Math. Phys.* 56 (2005) 11-22
 22. M. Francaviglia, M. Palese, E. Winterroth, Second variational derivative of gauge-natural invariant Lagrangians and conservation laws, in J. Bures, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and Its Applications*, Proc. Conf., Prague, Aug. 2004; Charles University in Prague, Czech Republic, 2005, 644 pp.
 23. M. Palese, E. Winterroth, Global generalized Bianchi identities for invariant variational problems on gauge-natural bundles, *Arch. Math.* (Brno) 41 (2005) 289-310
 24. M. Ferraris, M. Francaviglia, M. Palese, E. Winterroth, Canonical connections in gauge-natural field theories, *Internat. J. Geom. Methods in Modern Phys.* 6 (2008) 973-988
 25. D.R. Grigore, Lagrangian formalism on Grasmann manifolds, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 26. D.R. Grigore, On a generalization of the Poincare-Cartan form in higher-order field theory, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 57-76
 27. M. Palese, R. Vitolo, On a class of polynomial Lagrangians, *Rend. Circ. Mat. Palermo* (2) Suppl. 66 (2010) 147-159

[38] D. Krupka, The contact ideal, *Diff. Geom. Appl.* 5 (1995) 257-276

1. R. Vitolo, Bicompleksi Lagrangiani ed applicazioni alla meccanica relativistica *classica e quantistica*, Tesi di Dottorato in Matematica, Universita di Firenze, 1996, 175 pp.
2. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
3. G. Giachetta, L. Mangiarotti, G. Sardanashvily, *New Lagrangian and Hamiltonian Methods in Field Theory*, World Scientific, Singapore, 1997
4. A. Bejancu, L.H. Encinas, J.M. Masque, Invariant differential forms on the first jet prolongation of the cotangent bundle, *Houston J. Math.* (1998) 421-442
5. D.R. Grigore, Fock space methods and the lagrangian formalism on finite jet bundle extensions, *Differential Geometry and Applications*, Proc. Conf., Edited by I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Brno, August 1998; Masaryk Univ., Brno, Czech Republic, 1999, 469-468
6. D.R. Grigore, The variational sequence on finite jet bundle extensions and the Lagrangian formalism, *Diff. Geom. Appl.* 10 (1999) 43-77
7. J. Kasparova, A representation of the 1st order variational sequence in field theory, *Differential Geometry and Applications*, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 493-502
8. J. Musilova, M. Krbek. A note to the representation of the variational sequence in mechanics, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 511-523
9. R. Vitolo, Finite order variational bicomplexes, *Math. Proc. Cambridge Phil. Soc.* 125 (1999) 321-333
10. A. Prastaro, Cobordism groups in PDE's, *Acta Appl. Math.* 59 (1999) 111-201
11. J.M. Masque, L.M.P. Coronado, Parameter invariance in field theory and the Hamiltonian formalism, *Fortschr. Phys.* 48 (2000) 361-405
12. A. Prastaro, Cobordism groups in quantum PDEs, *Acta Appl. Math.* 64 (2000) 111-217
13. M. Krbek, J. Musilova, J. Kasparova, Representation of the variational sequence in field theory, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 147-160
14. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
15. O. Krupkova. Hamiltonian field theory, *J. Geom. Phys.* 43 (2002) 93-132
16. R.F. Peres, J.M. Masque, First-order locally variational operators, *J. Phys. A-Math. Gen.* 36 (2003) 6523-6529
17. M. de Leon, D.M. de Diego, A. Santamaria-Merino, Symmetries in classical field theory, *Internat. J. Geom. Methods in Modern Phys.* 1 (2004) 651-710; DOI:10.1142/S0219887804000290
18. M.C. Lopez, J.M. Masque, A report on gauge invariant forms and variational problems on the bundle of connections of a principal U(1)-bundle and the associated vector bundles, *Internat. J. Geom. Methods in Modern Phys.* 1 (2004) 367-404
19. D.R. Grigore, Lagrangian formalism on Grasmann manifolds, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
20. F. Strocchi, Symmetries in classical field theory, *Lecture Notes in Physics* 10/2007, 13-16 DOI: 10.1007/978-3-540-73593-9_3
21. R. Vitolo, Variational sequences, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
22. R. Vitolo, Finite order variational sequences: A short review, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka,

- Nova Science Publishers, New York, 2008, 99-115
23. S. Preston, Variational theory of balanced systems, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 675-688
 24. Cattafi, F., Palese, M., Winterroth, E., Variational derivatives in locally Lagrangian field theories and Noether-Bessel-Hagen currents, *Internat. J. Geom. Methods in Modern Physics* 13 (2016), DOI: 10.1142/S0219887816500675
 25. Cattafi, F., Palese, M., Winterroth, E., Variational derivatives in locally Lagrangian field theories and Noether-Bessel-Hagen currents, *Internat. J. Geom. Methods in Modern Physics* 13 (2016), DOI: 10.1142/S0219887816500675
 26. M. Palese, O. Rossi, E. Winterroth, J. Musilova, Variational sequences, representation sequences and applications in physics, *Sigma* 12 (2016) 045, 45 pp.; <http://dx.doi.org/10.3842/SIGMA.2016.045>
- [39] **D. Krupka, The trace decomposition problem, *Beiträge zur Algebra und Geometrie* 36 (1995) 303-315**
1. J. Mikes, On the general trace decomposition problem, in J. Janyska, I. Kolar, J. Slovak, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, 1995; Masaryk Univ., Brno, 1996, 45-50
 2. C. Udriste, I.E. Hirica, Family of projective projections on tensors and connections, *Balkan J. Geom. Appl.* 2 (1997) 139-156
 3. I.E. Hirica, Absolute invariant operators on differentiable manifolds, in Gr. Tsagas, Ed., *Proc. Workshop on Glob. Anal., Diff. Geom. and Lie Algebras*, Geometry Balkan Press, 1998, 37-51
 4. I.E. Hirica, C. Udriste, Decompositions of tensor fields and connections, in *Proc. Internat. Workshop on Fundamental Open Problems in Math. Phys. and other Sciences*, Beijing, Aug. 1997; Hadronic J. Suppl., USA, 1999
 5. L. Lakoma, J. Mikes, L. Mikusova, The decomposition of tensor spaces, in *Differential Geometry and Applications*, Proc. Conf., Edited by I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Brno, August 1998; Masaryk Univ., Brno, Czech Republic, 1999, 371-378
 6. D.R. Grigore, The variational sequence on finite jet bundle extensions and the Lagrangian formalism, *Diff. Geom. Appl.* 10 (1999) 43-77
 7. D.R. Grigore, Trivial second order lagrangians in classical field theory, *Fortschr. Phys.* 47 (1999) 913-936
 8. J. Kasparova, A representation of the 1st order variational sequence in field theory, *Differential Geometry and Applications*, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 493-502
 9. I.E. Hirica, Invariant operators on real and complex manifolds, *Balkan J. Geom. Appl.* 4 (1999) 69-90
 10. O. Stolin, *New Approaches to Unitary Theories* (in Czech), PhD. Dissertation, Masaryk University, Brno, 1999, 78 pp.
 11. M. Crasmareanu, Particular trace decompositions and applications of trace decomposition to almost projective invariants, *Mathematica Bohemica* 126 (2001) 631-637
 12. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
 13. S. Funabashi, J.S. Pak, Y.J. Shcn, On the normality of an almost contact 3-structure on QR-submanifolds, *Czechoslovak Math. J.* 53 (2003) 571-589
 14. S. Funabashi, H.S. Kim, Y.M. Kim et al., Traceless component of the conformal curvature tensor in Kähler manifold, *Czechoslovak Math. J.* 56 (2006) 857-874

15. S. Funabashi, H.S. Kim, Y.M. Kim et al., F-traceless component of the conformal curvature tensor on Kähler manifold, *Bull. Korean Math. Soc.* 44 (2007) 795-806
16. A.G.P. Gomez-Lobo, J.M. Garcia, Spinor calculus on five-dimensional spacetimes, *Journ. Math. Phys.* 50 (2009), Article No. 122504
17. Pierre A. Milette, Elastodynamics of the spacetime continuum, *The Abraham Zelmanov Journal* 5 (2012), 221-275
18. Hyang Sook Kim, Jung-Hwan Kwon and Jin Suk Pak, Indefinite Kahler manifolds with the Krupka-type curvature tensor, *Balkan Journal of Geometry and Its Applications* 19 (2014), 62-72

[40] D. Krupka, The trace decomposition of tensors of type (1,2) and (1,3), in L Tamassy, J. Szenthe, Eds., *New Developments in Differential Geometry, Proc. Colloq. on Diff. Geom., Debrecen, Hungary, July 1994; Kluwer Academic Publishers, Dordrecht, 1996, 243-253*

1. C. Udriste, I.E. Hirica, Family of projective projections on tensors and connections, *Balkan J. Geom. Appl.* 2 (1997) 139-156
2. I.E. Hirica, Absolute invariant operators on differentiable manifolds, in Gr. Tsagas, Ed., *Proc. Workshop on Glob. Anal., Diff. Geom. and Lie Algebras, Geometry Balkan Press, 1998, 37-51*
3. L. Lakoma, J. Mikes, L. Mikusova, The decomposition of tensor spaces, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 371-378*
4. M. Crasmareanu, Particular trace decompositions and applications of trace decomposition to almost projective invariants, *Mathematica Bohemica* 126 (2001) 631-637
5. N. Bokan, P. Matzeu, Z. Rakic, Holonomy, geometry and topology of manifolds with Grassmann structure, *Mathematics and its Appl.* 581 (2006) 385-405

[41] D. Krupka, Variational sequences in mechanics, *Calc. Var.* 5 (1997) 557-583

1. M Modugno, R. Vitolo, Quantum connection and Poincare-Caeran form, in *Gravitation, electromagnetism and geometric structures*, G. Ferrarese, Ed., Pitagora, Bologna, 1996, 237-279
2. O. Krupkova, *The Geometry of Ordinary Variational Equations, Lecture Notes in Math. 1678, Springer, Berlin, 1997*
3. O. Krupkova, Mechanical systems with nonholonomic constraints, *J. Math. Phys.* 38 (1997) 5098-5126
4. J. Musilova, M. Krbek. A note to the representation of the variational sequence in mechanics, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 511-523*
5. O. Krupkova, Differential systems in higher order mechanics, in D. Krupka, Ed., *Proceedings of the Seminar on Differential Geometry, Silesian Univ., Opava, Czech Republic, 2000, 87-130*
6. M. Krbek, J. Musilova, J. Kasparova, Representation of the variational sequence in field theory, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry, Proc. Colloq., Debrecen, June 2000; Debrecen Univ., Debrecen, 2001, 147-160*
7. J. Sedenkova, On the invariant variational sequences in mechanics, *Rendiconti Del Circ. Mat. Palermo, Serie II, Suppl.* 71 (2003) 185-190
8. J. Stefanek, *A representation of the variational sequence by forms*, PhD Dissertation, Silesian Univ., Opava, December 1995 (quoted as preprint)

9. J. Sedenkova, A generalization of Lepage forms in mechanics, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 281-288
10. O. Krupkova, Helmholtz conditions in the geometry of SODEs, in F. Cantrijn, B. Langerock, Eds., *Differential Geometric Methods in Mechanics and Field Theory*, in Honour of W. Sarlet, Gent, Academia Press, 2007, 91-90
11. O. Krupkova, G.E. Prince, Second order ordinary differential equations in jet bundles and the inverse problem of the calculus of variations, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
12. R. Vitolo, Variational sequences, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
13. R. Vitolo, Finite order variational sequences: A short review, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 99-115
14. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
15. W.M. Mikulski, Uniqueness results for operators in the variational sequence, *Ann. Polon. Math.* 95 (2009) 125-133
16. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
17. O. Krupkova, R. Malikova, Helmholtz conditions and their generalizations, *Balkan Journal of Geometry and Its Applications*, Vol.15, No.1, 2010, pp. 80-89
18. R. Malikova, Galilei invariance and the Helmholtz morphism, *Miskolc Mathematical Notes* 14 (2013) 671-677
19. Z. Urban, Variational classes and mappings in the second order variational sequence: Explicit formulas *Kvaternion* 2 (2013) 69-81
20. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6
21. Volna, J., Urban, Z., The interior Euler-Lagrange operator in field theory, *Math. Slovaca* 65 (2015) 1427-1444
22. J. Janyska, M. Modugno, Quantum potential in covariant quantum mechanics, *Differential Geometry and Applications*, 2017; DOI: 10.1016/j.difgeo.2017.03.021
23. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
24. M. Palese, O. Rossi, E. Winterroth, J. Musilova, Variational sequences, representation sequences and applications in physics, *Sigma* 12 (2016) 045, 45 pp. <http://dx.doi.org/10.3842/SIGMA.2016.045>

[42] D.R. Grigore, D. Krupka, Invariants of velocities and higher order Grassmann bundles, *J. Geom. Phys.* 24 (1998) 244-264

1. J. Munoz, F.J. Muriel, J. Rodrigues, The contact system on the spaces of (m, l) -velocities, in I. Kolar, O. Kowalski, D. Krupka, J. Slovák, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 1999, 263-272
2. I. Kolar, Affine structure on Weil bundles, *Nagoya Math. J.* 158 (2000) 99-106
3. J. Munoz, F.J. Rodrigues, J. Muriel, Weil bundles and jet spaces, *Czechoslovak Math. J.* 50 (2000) 721-748
4. J. Munoz, F.J. Muriel, J. Rodrigues, A remark on Goldschmidt's theorem on formal integrability, *J. Math. Anal. Appl.* 254 (2001) 275-290
5. A. Cabras, I. Kolar, Prolongation of projectable tangent valued forms, *Arch. Math.*

- 38 /2002) 243-257
6. G. Manno, On the geometry of Grassmannian equivalent connections, *Advances in Geom.* 8 (2008) 329-342
 7. D.R. Grigore, Lagrangian formalism on Grassmann manifolds, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 8. D.R. Grigore, On a generalization of the Poincare-Cartan form in higher-order field theory, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 57-76
 9. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
 10. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170.

[43] D. Krupka, J. Musilova, Trivial lagrangians in field theory, *Diff. Geom. Appl.* 9 (1998) 293-305

1. O. Krupkova, *The Geometry of Ordinary Variational Equations*, Lecture Notes in Math. 1678, Springer, Berlin, 1997
2. G. Giachetta, L. Mangiarotti, G. Sardanashvily, Iterated BRST cohomology, *Lett. Math. Phys.* 53 (2000) 143-156
3. Mangiarotti, G.A. Sardanashvily, *Connections in Classical and Quantum Field Theory*, World Scientific, 2000
4. M. Krbek, J. Musilova, J. Kasparova, Representation of the variational sequence in field theory, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 147-160
5. G. Giachetta, L. Mangiarotti, G. Sardanashvily, Cohomology of the infinite jet space and the inverse problem, *J. Math. Phys.* 42 (2001) 4272-4282
6. R. Vitolo, Finite-order formulation of Vinogradov's C-spectral sequence, *Acta Appl. Math.* 72 (2002) 133-154
7. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
8. O. Krupkova, Hamiltonian field theory, *J. Geom. Phys.* 43 (2002) 93-132
9. G. Sardanashvily, *Cohomology of the variational complex in the class of exterior forms of finite order*, Hindawi, *IJMMS* 30:1 (2002) 39-47
10. M.C. Lopez, J.M. Masque, T. Ratiu, Gauge invariance and variational trivial problems on the bundle of connections, *Differ. Geom. Appl.* 19 (2003) 127-145
11. R. Vitolo, G. Saccomandi, Null Lagrangians for nematic elastomers, *Fundamentalnaya i prikladnaya matematika*, vol. 10 (2004), no. 1, pp. 17–28.
12. M. Krbek, J. Musilova, Representation of the variational sequence by differential forms, *Acta Appl. Math.* 88 (2005) 177-199
13. R. Vitolo, Variational sequences, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
14. J. Musilova, M. Lenc, Lepage forms in variational theories: From Lepage's idea to the variational sequence, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 3-26
15. O. Krupkova, Lepage forms in the calculus of variations, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 27-55
16. R. Vitolo, Finite order variational sequences: A short review, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 99-115

17. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
18. A. Borowiec, M. Ferraris, M. Francaviglia, M. Palese, Conservation laws for non-global Lagrangians, *Universitatis Jagellonicae Acta Mathematica*, Fasc. XLI (2003)319-321
19. G. Gachetta, L. Mangiarotti, G. Sardanashvily, *Advanced Classical Field Theory*, World Scientific, 2009
20. M. Ferraris, M. Palese, E. Winterroth, Local variational problems and conservation laws, *Diff. Geom. Appl.* (2011)
21. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
22. M. Ferraris, M. Palese, E. Winterroth, Local variational problems and conservation laws, *Diff. Geom. Appl.* 29 (2011) S80-S85

[45] Dao Qui Chao, D. Krupka, 3rd order differential invariants of coframes, Math. Slovaca 49 (1999) 563-576

1. J. Brajercik, Higher order invariant variational principles on frame bundles, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2005, 58 pp.

[46] D. Krupka, Variational sequences and variational bicomplexes, in Differential Geometry and Applications, Proc. Conf., I. Kolar, O. Kowalski, D. Krupka and J. Slovak, Eds., Brno, August 1998, Masaryk University, Brno, Czech Republic, 1999, 525-531

1. M. Krbek, The Representation of the Variational Sequence by Forms, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
2. M. Krbek, J. Musilova, Representation of the variational sequence by differential forms, *Acta Appl. Math.* 88 (2005) 177-199
3. R. Vitolo, Variational sequences, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
4. J. Musilova, M. Lenc, Lepage forms in variational theories: From Lepage's idea to the variational sequence, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 3-26
5. R. Vitolo, Finite order variational sequences: A short review, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 99-115
6. P.J. Olver, Invariant variational problems and invariant flows via moving frames, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166
7. M. Palese, R. Vitolo, On a class of polynomial Lagrangians, *Rend. Circ. Mat. Palermo (2) Suppl.* 66 (2010) 147-159
8. A. Borowiec, M. Ferraris, M. Francaviglia, M. Palese, Conservation laws for non-global Lagrangians, *Universitatis Jagellonicae Acta Mathematica*, Fasc. XLI (2003)319-321
9. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
10. Z. Urban, Variational classes and mappings in the second order variational sequence: Explicit formulas, *Kvaternion 2* (2013) 69-81
11. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015,

- 215-284; ISBN 978-94-6239-108-6
12. M. Palese, O. Rossi, E. Winterroth, J. Musilova, Variational sequences, representation sequences and applications in physics, *Sigma* 12 (2016) 045, 45 pp.
<http://dx.doi.org/10.3842/SIGMA.2016.045>
 13. M. Ferraris, M. Palese, E. Winterroth, Local variational problems and conservation laws, *Diff. Geom. Appl.* 29 (2011) S80-S85
- [47] **D. Krupka, J. Musilova, Erratum: Trivial lagrangians in field theory, *Diff. Geom. Appl.* 9 (1998) 293-305; *Diff. Geom. Appl.* 10 (1999) 303**
1. P. Matteucci, Einstein-Dirac theory on gauge-natural bundles, *Rep. Math. Phys.* 52 (2003) 115-139
 2. M. Ferraris, M. Palese, E. Winterroth, Local variational problems and conservation laws, *Diff. Geom. Appl.* 29 (2011) S80-S85
- [49] **D. Krupka, J. Musilova, Recent results in variational sequence theory, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 161-186***
1. M. Krbek, The Representation of the Variational Sequence by Forms, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
 2. M. Krbek, J. Musilova, Representation of the variational sequence, *Rep. Math. Phys.* 51 (2003) 251-258
 3. M. Krbek, J. Musilova, Representation of the variational sequence by differential forms, *Acta Appl. Math.* 88 (2005) 177-199
 4. J. Musilova, M. Lenc, Lepage forms in variational theories: From Lepage's idea to the variational sequence, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 3-26
 5. W.M. Mikulski, Uniqueness results for operators in the variational sequence, *Ann. Polon. Math.* 95 (2009) 125-133
- [50] **D. Krupka, Global variational functionals on fibered spaces, *Nonlinear Analysis* 47 (2001) 2633-2642**
1. G. Manno, The geometry of the geodesic equation in the framework of jets of submanifolds, in K. Tas, D. Krupka, O. Krupkova, D. Baleanu, Eds., *Global Analysis and Applied Mathematics*, AIP Conf. Proc. 729, American Institute of Physics, 2004, 207-217
 2. G. Manno, R. Vitolo, Geometric aspects of higher-order variational principles on submanifolds, *Acta Appl. Math.* 101 (2008) 215-229
- [52] **D. Krupka, Variational principles for energy-momentum tensors, *Rep. Math. Phys.* 49 (2002) 259-268**
1. A. Hakova, O. Krupkova, Variational first-order partial differential equations, *J. Differential Equations* 191 (2003) 67-89
 2. R.F. Peres, J.M. Masque, First-order locally variational operators, *J. Phys. A-Math. Gen.* 36 (2003) 6523-6529
 3. N. Voicu, Source forms and their variational completions, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6

4. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
- [54] P. Musilova, D. Krupka, Differential invariants of immersions of manifolds with metric fields, Rep. Math. Phys. 51 (2003) 307-313**
1. P. Musilova, J. Musilova, Natural operators of smooth mappings of manifolds with metric fields, Rep. Math. Phys. 54 (2004) 273-283
 2. P. Musilova, J. Musilova, Differential invariants of immersions of manifolds with metric fields, Commun. Math. Phys. 249 (2004) 319-329
- [55] J. Brajercik, D. Krupka, Variational principles for locally variational forms, J. Math. Phys. 46 (2005) 052903, 1-15**
1. R. Vitolo, Finite order variational sequences: A short review, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 99-115
 2. A. Patak, Hilbert-Yang-Mills functional: Examples, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 655-664
 3. A. Patak, *Geometrical Structure of Gauge Theories: Electromagnetism, Gravitation*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2008, 65 pp.
 4. J. Brajercik, GL(n,R)-invariant variational principles on frame bundles, *Balkan J. Geom. Appl.* 13 (2008) 11-19
 5. A. Patak, Hamiltonian structure of the Young-Mills functional, *Diff. Geom. Appl.* 29 (2011) S251-S254
 6. J. Brajercik, Euler-Poincare reduction on frame bundles, *Diff. Geom. Appl.* 29, Suppl. 1, 33-40
 7. M. Palese, E. Winterroth, Variational Lie derivative and cohomology classes, *AIP Conference Proceedings* 1360, Ed.: Herdeiro, C; Picken, R (2011) 106-112
 8. Marcella Palese and Ekkehart Winterroth, Symmetries of Helmholtz forms and globally variational dynamical forms, *Journal of Physics: Conference Series* 343 (2012) 012129, doi:10.1088/1742-6596/343/1/012129, 1-4
 9. D. Canarutto, Overconnections and the energy tensors of gauge and gravitational fields, *J. Geom. Phys.* 106, (2016) 192-204
 10. M. Palese, E. Winterroth, Topological obstructions in Lagrangian field theories, with application to 3D Chern-Simons gauge theory, *Journal of Mathematical Physics* 58 (2), August 2016; DOI: 10.1063/1.4975336
 11. M. Ferraris, M. Palese, E. Winterroth, Local variational problems and conservation laws, *Diff. Geom. Appl.* 29 (2011) S80-S85
- [57] D. Krupka, J. Sedenkova, Variational sequences and Lepage forms, in J. Bures, O. Kowalski, D. Krupka, J. Slovak, Eds., Differential Geometry and Its Applications, Proc. Conf., Prague, Aug. 2004: Charles University in Prague, Czech Republic, 2005, 617-627**
1. O. Krupkova, G.E. Prince, Second order ordinary differential equations in jet bundles and the inverse problem of the calculus of variations, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
 2. R. Vitolo, Variational sequences, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373

3. J. Musilova, M. Lenc, Lepage forms in variational theories: From Lepage's idea to the variational sequence, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 3-26
4. O. Krupkova, Lepage forms in the calculus of variations, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 27-55
5. R. Vitolo, Finite order variational sequences: A short review, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 99-115
6. O. Krupkova, Helmholtz conditions in the geometry of SODEs, in F. Cantrijn, B. Langerock, Eds., *Differential Geometric Methods in Mechanics and Field Theory*, Volume in Honour of W. Sarlet, Gent, Academia Press, 2007, 91-90
7. O. Krupkova, Variational equations on manifolds, in A.R. Baswell, Ed., *Advances in Mathematics Research*, Vol. 9, Nova Science Publishers, New York, 2009, 201-274
8. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
9. M. Francaviglia, M. Palese, E. Winterroth, Locally variational invariant field equations and global currents: Chern-Simmons theories, *Communications in Mathematics* 20 (2012) 13-22
10. O. Krupkova, R. Malikova, Helmholtz conditions and their generalizations, *Balkan Journal of Geometry and Its Applications*, Vol.15, No.1, 2010, pp. 80-89
11. R. Malikova, Galilei invariance of the Helmholtz morphism, *Miskolc Mathematical Notes*, Vol. 14 (2013), No. 2, pp. 671-677
12. Z. Urban, Variational classes and mappings in the second order variational sequence: Explicit formulas *Kvaternion* 2 (2013) 69-81
13. M. Francaviglia, M. Palese and E. Winterroth, Cohomological obstructions in locally variational field theories, in XXIst International Conference on Integrable Systems and Quantum Symmetries, *Journal of Physics*, Conference Series 474 (2013) 012017, doi:10.1088/1742-6596/474/1/012017
14. R. Malikova, Galilei invariance and the Helmholtz morphism, *Miskolc Mathematical Notes* 14 (2013) 671-677
15. J. Volna, Z. Urban, *First-order variational sequences in field theory*, in *The Inverse Problem of the Calculus of Variations*, In D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
16. Volna, J., Urban, Z., The interior Euler-Lagrange operator in field theory, *Math. Slovaca* 65 (2015) 1427-1444
17. Cattafi, F., Palese, M., Winterroth, E., Variational derivatives in locally Lagrangian field theories and Noether-Bessel-Hagen currents, *Internat. J. Geom. Methods in Modern Physics* 13 (2016), DOI: 10.1142/S0219887816500675
18. M. Palese, O. Rossi, E. Winterroth, J. Musilova, Variational sequences, representation sequences and applications in physics, *Sigma* 12 (2016) 045, 45 pp. <http://dx.doi.org/10.3842/SIGMA.2016.045>

[58] D. Krupka, O. Krupkova, G. Prince, W. Sarlet, Contact symmetries and variational sequences, in J. Bures, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and Its Applications, Proc. Conf., Prague, Aug. 2004: Charles University in Prague, Czech Republic, 2005, 605-615*

1. O. Krupkova, G.E. Prince, Second order ordinary differential equations in jet bundles and the inverse problem of the calculus of variations, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
2. R. Vitolo, Variational sequences, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373

3. R. Vitolo, Finite order variational sequences: A short review, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 99-115
4. O. Krupkova, Helmholtz conditions in the geometry of SODEs, in F. Cantrijn, B. Langerock, Eds., *Differential Geometric Methods in Mechanics and Field Theory*, Volume in Honour of W. Sarlet, Gent, Academia Press, 2007, 91-90
5. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
6. Marcella Palese and Ekkehart Winterroth, Symmetries of Helmholtz forms and globally variational dynamical forms, *Journal of Physics: Conference Series* 343 (2012) 012129, doi:10.1088/1742-6596/343/1/012129, 1-4
7. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6

[59] J. Brajercik, D. Krupka, Noether currents and order reduction on frame bundles, in Proc. 40th Sympos. on Finsler Geometry "In the Memory of our Teachers", H. Shimada and V.S. Sabau, Eds., Hokkaido Tokai University, Sapporo, Society of Finsler Geometry, 2005, 34-37

1. J. Brajercik, $GL(n, \mathbb{R})$ -invariant variational principles on frame bundles, *Balkan J. Geom. Appl.* 13 (2008) 11-19

[60] D. Krupka, Trace decompositions of tensor spaces, Linear and Multilinear Algebra 54 (2006) 235-263

1. M. Jukl and L. Juklova, On decomposition problems on manifolds with a special differential operator, *Miskolc Mathematical Notes* 14 (2013) 591-599
2. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
3. J. Mikes, E. Stepanova, A. Vanzurova, *Differential Geometry of Special Mappings*, Palacky Univ. Olomouc, 2015

[61] D. Krupka, The total divergence equation, Lobachevskii Journal of Mathematics 23 (2006) 71-93

1. M.A. Malakhaltsev, De Rham cohomology, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
2. R. Vitolo, Finite order variational sequences: A short review, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 99-115

[62] D. Krupka, O. Krupkova, G. Prince, W. Sarlet, Contact symmetries of the Helmholtz form, Differential Geometry and Applications 25 (2007) 518-542

1. O. Krupkova, G.E. Prince, Second order ordinary differential equations in jet bundles and the inverse problem of the calculus of variations, in D. Krupka, D. Saunders, Eds., *Handbook of Global Analysis*, Elsevier, 2008, 327-373
2. O. Krupkova, Helmholtz conditions in the geometry of SODEs, in F. Cantrijn, B. Langerock, Eds., *Differential Geometric Methods in Mechanics and Field Theory*, in Honour of W. Sarlet, Gent, Academia Press, 2007, 91-90

- [63] **J. Brajercik, D. Krupka, Cohomology and local variational principles, Proc. of the XV International Workshop on Geometry and Physics (Puerto de la Cruz, Tenerife, Canary Islands, Spain, September 11–16, 2006, Publ. de la RSME, 2007) 119-124.**
1. M. Ferraris, M. Palese, E. Winterroth, Local variational problems and conservation laws, *Diff. Geom. Appl.* 29 (2011) S80-S85
- [64] **D. Krupka, Natural variational principles, in G. Gaeta, R. Vitolo, S. Walcher, Eds., *Symmetry and Perturbation Theory (SPT 2007)*, Proc. Conf., Otranto, Italy, June 2-9, 2007, World Scientific, 2007, 116-123**
1. J. Brajercik and M. Demko, Second-order natural Lagrangians on coframe bundles, *Miskolc Mathematical Notes* 14 (2013) 487-494
- [65] **D. Krupka, The structure of the Euler-Lagrange mapping, paper in honour of N.I. Lobachevskii, Russian Mathematics (Iz. VUZ) 51 (2007) 52-70**
1. Cendra, H, Etchehoury, M. Ferraro, SJ, An extension of the Dirac and Gotay-Nester Theories of constraints for Dirac dynamical systems, *J. of Geometric Mechanics* 6 (2014) 167-236
- [66] **D. Krupka, The Vainberg-Tonti Lagrangian and the Euler-Lagrange mapping, in F. Cantrijn, B. Langerock, Eds., *Differential Geometric Methods in Mechanics and Field Theory, in Honour of W. Sarlet, Gent, Academia Press, 2007, 81-90***
1. M. Crampin, D.J. Saunders, Homotopy operators for the variational bicomplex, representations of the Euler-Lagrange complex, and the Helmholtz-Sonin conditions, *Lobachevskii J. Math.* 30 (2009) 107-123
 2. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6
 3. N. Voicu, Source forms and their variational completions, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6
 4. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
- [67] **A. Patak, D. Krupka, Geometric structure of the Hilbert-Yang-Mills functional, Internat. J. Geom. Met. Mod. Phys. 5 (2008) 387-405**
1. A. Patak, *Geometrical Structure of Gauge Theories: Electromagnetism, Gravitation*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2008, 65 pp.
 2. A. Patak, Hamiltonian structure of the Yang-Mills functional, *Diff. Geom. Appl.* 29, Suppl. 1, 251-254
- [68] **D. Krupka, O. Krupkova, Contact symmetries and variational PDE's, Acta Appl. Math. 101 (2008), in Honour of V. Lychagin, 163-176**

1. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
- [69] **D. Krupka, Z. Urban, Differential invariants and higher order Grassmann bundles, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., Differential Geometry and its Applications, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 463-473**
1. R. Vitolo, Finite order variational sequences: A short review, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 99-115
 2. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
 3. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6
- [70] **Z. Urban, D. Krupka, Variational sequences in mechanics on Grassmann fibrations, Acta Appl. Math. 112 No. 2 (2010), 225-249, DOI 10.1007/s10440-010-9561-y**
1. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
 2. Z. Urban, Variational classes and mappings in the second order variational sequence: Explicit formulas Kvaternion 2 (2013) 69-81
 3. Cendra, H, Etchechoury, M. Ferraro, SJ, An extension of the Dirac and Gotay-Nester Theories of constraints for Dirac dynamical systems, J. of Geometric Mechanics 6 (2014) 167-236
 4. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170.
 5. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
 6. G. Moreno, M.E. Stypa, Natural boundary conditions in geometric calculus of variations, Math. Slovaca 65 (2015), DOI: <https://doi.org/10.1515/ms-2015-0105>
- [71] **D. Krupka, M. Krupka, Higher order Grassman fibrations and the calculus of variations, Balkan J. Geom. Appl. 15 (2010) 68 - 79**
1. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
 2. E. Tanaka, *Parameter Invariant Lagrangian Formulation of Kawaguchi Geometry*, PhD thesis, Palacky University Olomouc, 2013
 3. M. Popescu, P. Popescu, Totally singular Lagrangians and affine Hamiltonians of higher order, Balkan J. of Geom. And Appl. 16 (2011), 122-132
- [72] **D. Krupka, O. Krupkova, D. Saunders, The Cartan form and its generalizations in the calculus of variations, Int. J. Geom. Met. Mod. Phys. 07 (2010) 631-654**

1. M. Crampin, T. Mestdag, The Cartan form for constrained Lagrangian systems and the nonholonomic Noether theorem, *Internat. J. Geom. Methods in Modern Physics* 08 (2011) 897-923
 2. M. Gotay, M. Castrillon-Lopez, Covariantizing classical field theories, *J. Geom. Mech.* 3 (2012) 487-506
 3. M. Francaviglia, M. Palese, E. Winterroth, Cohomological obstructions in locally variational field theories, *J. of Phys., Conference Series* 474 (2013) 012017,
 4. I. Bucataru, A setting for higher order differential equation fields and higher order Lagrange and Finsler spaces, *J. Geom. Mech.* 5 (2013) 257-279
 5. M. Palese, E. Winterroth, Generalized symmetries generating Noether currents and canonical conserved quantities, *J. of Phys., Conference Series* 563 (2014) 012023
 6. O. Rossi, Homogeneous differential equations and the inverse problem of the calculus of variations, *Publ. Math. Debrecen* 84 (2014) 165-188
 7. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6
 8. Ootsuka, T., Yahagi, R., Ishida, M. Tanaka, E. Energy-momentum conservation laws in Finsler/Kawaguchi Lagrangian formulation, *Classical and Quantum Gravity* 32 (2015) 165016
 9. D. Canarutto, Frolicher-smooth geometries, quantum jet bundles and BRST symmetry, *J. Geom. Phys.* 88 (2015) 113-128
 10. D. Canarutto, On the geometry of ghosts, *Rep. Math.Phys.* 78 (2016) 123-156
 11. Cattafi, F., Palese, M., Winterroth, E., Variational derivatives in locally Lagrangian field theories and Noether-Bessel-Hagen currents, *Internat. J. Geom. Methods in Modern Physics* 13 (2016), DOI: 10.1142/S0219887816500675
 12. D. Canarutto, Overconnections and the energy tensors of gauge and gravitational fields, *J. Geom. Phys.* 106, (2016) 192-204
 13. M. Palese, O. Rossi, E. Winterroth, J. Musilova, Variational sequences, representation sequences and applications in physics, *Sigma* 12 (2016) 045, 45 pp. <http://dx.doi.org/10.3842/SIGMA.2016.045>
 14. Bates, L., Chhabra, R., Sniatycki, J., *Elastica as a dynamical system*, *Journal of Geometry and Physics* 110, 2016, 348-381
 15. Capriotti, S., Routh reduction and Cartan mechanics, *Journal of Geometry and Physics* 114 (2017) 23-64
- [74] **E. Tanaka, D. Krupka, On metrizability of invariant affine connections, Internat. J. Geom. Met. Mod. Phys. 9 (2012) 1250014 (15 pages); DOI:10.1142/S0219887812500144.**
1. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170.
 2. Z. Urban, J. Volna, The metrizability problem for Lorentz-invariant affine connections, *Internat. J. Geom. Methods in Modern Physics* 13, Special issue (2016), 1650110; DOI: 10.1142/S0219887816501103
 3. Zhu BC, Guo J., He GX, Zhang, PC, Static Schwarzschild affine connection revised by physical decomposition of gravitational field, Proc. 2015 internat. Conf. on mechatronics, electronic, industrial and control engineering, AER Advances in Engineering Research, China, 2015, 788-791
- [76] **Z. Urban, D. Krupka, The Zermelo conditions and higher-order homogeneous functions, Publ. Math. Debrecen 82 (2013), 59-76; DOI: 10.5486/PMD.2013.5265**

1. E. Tanaka, *Parameter Invariant Lagrangian Formulation of Kawaguchi Geometry*, PhD thesis, Palacky University Olomouc, 2013
2. Janhua Yuan, Jian Yang, Dan Shi, Wenbao Ai, A continuation fixed-point iterative method on harmonic generations with strong nonlinear optical effects in multi-layer structures, *Computational and Applied Mathematics*, online 28 August 2015
3. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6
4. T. Ootsuka, R. Yahagi, M. Ishida, E. Tanaka, Energy-momentum conservation laws in Finsler/Kawaguchi Lagrangian formulation, *Classical and quantum gravity* 32 (2015), article number 165016; DOI: 10.1088/0264-9381/32/16/156016
5. O. Rossi, Homogeneous differential equations and the inverse problem of the calculus of variations, *Publ. Math. Debrecen* 84 (2014) 165-188
6. I. Bucataru, A setting for higher order differential equation fields and higher order Lagrange and Finsler spaces, *J. Geom. Mech.* 5 (2013) 257-279

[78] Z. Urban, D. Krupka, The Helmholtz conditions for systems of second order homogeneous differential equations, *Publ. Math. Debrecen* 83 (2013), 71-84; DOI:10.5486/PMD.2013.5500

1. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170.
2. Yuan, JH, Yang, J, Shi, D, Ai, W, A continuation fixed-point iterative method on harmonic generations with strong nonlinear optical effects in multi-layer structures, *Computation & Applied Math.* 36 (2017) 805-824; DOI: 10.1007/s40314-015-0267-7
3. O. Rossi, Homogeneous differential equations and the inverse problem of the calculus of variations, *Publ. Math. Debrecen* 84 (2014) 165-188

[79] D. Krupka, Z. Urban, J. Volna, Variational projectors in fibred manifolds, *Miskolc Mathematical Notes* 14 (2013), 503-516

1. Z. Urban, Variational classes and mappings in the second order variational sequence: Explicit formulas, *Kvaternion* 2 (2013) 69-81
2. Z. Urban, Variational Principles for Immersed Submanifolds, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170.
3. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
4. Volna, J., Urban, Z., The interior Euler-Lagrange operator in field theory, *Math. Slovaca* 65 (2015) 1427-1444
5. Cattafi, F., Palese, M., Winterroth, E., Variational derivatives in locally Lagrangian field theories and Noether-Bessel-Hagen currents, *Internat. J. Geom. Methods in Modern Physics* 13 (2016), DOI: 10.1142/S0219887816500675
6. M. Palese, O. Rossi, E. Winterroth, J. Musilova, Variational sequences, representation sequences and applications in physics, *Sigma* 12 (2016) 045, 45 pp. <http://dx.doi.org/10.3842/SIGMA.2016.045>

[80] E. Tanaka, D. Krupka, On the structure of Finsler and areal spaces, *Miskolc*

Mathematical Notes 14 (2013), 539-546.

1. E. Tanaka, *Parameter Invariant Lagrangian Formulation of Kawaguchi Geometry*, PhD thesis, Palacky University Olomouc, 2013
2. Z. Urban, *Variational Principles for Immersed Submanifolds*, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6

[81] D. Krupka, Lepage forms in Kawaguchi spaces and the Hilbert form, paper in honor of Professor Lajos Tamassy, Publ. Math. Debrecen 84 (2014), 147-164; DOI: 10.5486/PMD.2014.5791.

1. Z. Urban, *Variational Principles for Immersed Submanifolds*, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6

[82] J. Brajercik, M. Demko, D. Krupka, Principal bundle structure on jet prolongations of frame bundles, Math. Slovaca 64 (2014), 1277-1290; DOI: 10.2478/s12175-014-0275-x.

1. de Leon, M., Mendez, AM., *Principal bundle structures among second order frame bundles*, *Diff. Geom. Appl.* 47 (2016) 202-211

[83] Z. Urban, D. Krupka, Foundations of higher-order variational theory on Grassmann fibrations, Internat. J. of Geom. Methods in Modern Physics 11 (2014); DOI: 10.1142/S0219887814600238

1. Z. Urban, *Variational Principles for Immersed Submanifolds*, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6
2. J. Volna, Z. Urban, *First-order variational sequences in field theory*, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6

[85] D. Krupka, Invariant variational structures on fibred manifolds, International Journal of Geometric Methods in Modern Physics, 12 (2015) 1550020; DOI: 10.1142/S0219887815500206

1. Z. Urban, *Variational Principles for Immersed Submanifolds*, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 103-170; ISBN 978-94-6239-108-6

[86] D. Krupka, G. Moreno, Z. Urban, and J. Volna, On a bicomplex induced by the variational sequence, International Journal of Geometric Methods in Modern Physics 12 (2015), DOI: 10.1142/S0219887815500577

1. J. Volna, Z. Urban, *First-order variational sequences in field theory*, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
2. Cattafi, F., Palese, M., Winterroth, E., *Variational derivatives in locally Lagrangian field theories and Noether-Bessel-Hagen currents*, *Internat. J. Geom. Methods*

- in Modern Physics 13 (2016); DOI: 10.1142/S0219887816500675
3. G. Moreno, M.E. Stypa, Geometry of the free-sliding Bernoulli beam, Commun. in Math. 24 (2016) 153-171

[87] N. Voicu, D. Krupka, Canonical variational completion of differential equations, Journ. Math. Phys. 56 (4), 043507 (2015); <http://doi.org/10.1063/1.4918789>.

1. N. Voicu, Energy-momentum tensors in classical field theory - A modern perspective, Internat. J. Geom. Methods in Modern Physics 13, (2016)

Proceedings

[2] D. Krupka, A. Svec, Eds., *Differential Geometry and its Applications*, Proc. Conf., Brno, Czechoslovakia, Aug. 1986; Math. Appl., East Eur. Series 27, Reidel, Dordrecht, 1987, 381 pp.

1. G. Sardanashvily, *Gauge Theory in Jet Manifolds*, Hadronic Press, 1993

Dissertations

[4] D. Krupka, *Natural Lagrangean structures*, DrSc. Dissertation, Czechoslovak Academy of Sciences, Prague, 1981

1. I. Kolar, Lie derivatives and higher order lagrangians, in O. Kowalski, Ed., *Differential Geometry and its Applications*, Proc. Conf., N. Mesto na Morave, Czechoslovakia, Sept. 1980; Charles University, Prague, 1982, 117-123
2. J. Janyska, Natural Lagrangian structures, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 143-166

Unpublished notes, preprints

[5] D. Krupka, *The geometry of Lagrange Structures*, Preprint Series in Global Analysis GA7/1997, Silesian University Opava, Czech Republic, 82 pp.

1. D.R. Grigore, The variational sequence on finite jet bundle extensions and the Lagrangian formalism, Diff. Geom. Appl. 10 (1999) 43-77
2. M. Mraz, J. Musilova, Variational compatibility of force laws, in I. Kolar, O. Kowalski, D. Krupka, J. Slovak, Eds., *Differential Geometry and its Applications*, Satellite Conf. of ISM in Berlin, Proc. Conf., Brno, Czech Republic, Aug. 1998; Masaryk Univ., Brno, 553-561
3. M. Krbek, J. Musilova, J. Kasparova, Representation of the variational sequence in field theory, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 147-160
4. O. Krupkova, Hamilton field theory revisited: A geometric approach to regularity, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 187-207
5. O. Krupkova, Hamiltonian field theory, J. Geom. Phys. 43 (2002) 93-132
6. M. Krbek, J. Musilova, Representation of the variational sequence, Rep. Math.

- Phys. 51 (2003) 251-258
7. M. Krbek, J. Musilova, Representation of the variational sequence by differential forms, *Acta Appl. Math.* 88 (2005) 177-199
 8. J. Brajercik, $GL(n, \mathbb{R})$ -invariant variational principles on frame bundles, *Balkan J. Geom. Appl.* 13 (2008) 11-19
 9. A. Patak, Hilbert-Yang-Mills functional: Examples, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 655-664
 10. J. Musilova, M. Lenc, Lepage forms in variational theories: From Lepage's idea to the variational sequence, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 3-26
 11. D.R. Grigore, On a generalization of the Poincare-Cartan form in higher-order field theory, in O. Krupkova, D. Saunders, Eds., *Variations, Geometry and Physics*, in Honour of D. Krupka, Nova Science Publishers, New York, 2008, 57-76
 12. A. Patak, *Geometrical Structure of Gauge Theories: Electromagnetism, Gravitation*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2008, 65 pp.
 13. J. Brajercik, Higher order invariant variational principles on frame bundles, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2005, 58 pp.
 14. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.
 15. A. Patak, Hamiltonian structure of the Yang-Mills functional, *Diff. Geom. Appl.* 29, Suppl. 1, 251-254
- [7] **D.Q. Chao, D. Krupka, 3-rd order differential invariants of coframes, Preprint Series in Global Analysis GA10/1997, Silesian University Opava, Czech Republic**
1. V.M. Fedorchuk, V.I. Fedorchuk, On first-order differential invariants of the non-conjugate subgroups of the Poincare group $P(1,4)$, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 431-444
- [8] **D. Krupka, Elementary Sheaf Theory, Preprint Series in Global Analysis GA2/1998, Silesian University Opava, Czech Republic, 64 pp.**
1. M. Krbek, J. Musilova, J. Kasparova, Representation of the variational sequence in field theory, in L. Kozma, P.T. Nagy, L. Tamassy, Eds., *Steps in Differential Geometry*, Proc. Colloq., Debrecen., June 2000; Debrecen Univ., Debrecen, 2001, 147-160
 2. M. Krbek, *The Representation of the Variational Sequence by Forms*, PhD Dissertation, Faculty of Science, Masaryk University, Brno, 2002
 3. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6
- [9] **D. Krupka, Smooth Manifolds, Preprint Series in Global Analysis GA14/2000, Silesian University Opava, Czech Republic, 31 pp.**
1. Z. Urban, *Variational Sequences in Mechanics on Grassmann Fibrations*, PhD Thesis, University of Ostrava, 2011, 75 pp.

- [10] **D. Krupka, M. Lenc, The Hilbert variational principle, Preprint 3/2002 GACR 201/00/0724, Masaryk University, Brno, 2002, 75 pp.**
1. A. Patak, Hilbert-Yang-Mills functional: Examples, in O. Kowalski, D. Krupka, O. Krupkova, J. Slovak, Eds., *Differential Geometry and its Applications*, in Honour of L. Euler, Proc. Conf., Olomouc, Aug. 2007; World Scientific, Singapore, 2008, 655-664
 2. A. Patak, *Geometrical Structure of Gauge Theories: Electromagnetism, Gravitation*, PhD Dissertation, Masaryk Univ., Faculty of Science, Brno, 2008, 65 pp.
 3. A. Patak, Hamiltonian structure of the Young-Mills functional, *Diff. Geom. Appl.* 29 (2011) S251-S254
 4. J. Volna, Z. Urban, First-order variational sequences in field theory, in *The Inverse Problem of the Calculus of Variations*, D.V. Zenkov, Editor, Atlantis Press, 2015, 215-284; ISBN 978-94-6239-108-6