INTEGRAL GEOMETRY METHODS ON DERIVED CATEGORIES AND THEIR MODULI STACKS IN THE SPACE-TIME[1]

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ABSTRACT

Geometrical moduli stacks are obtained through the Penrose transforms frame used on generalized $\mathcal{D}$-modules as $\mathcal{D}_{\mathbb{M}}$ -modules that are $\mathcal{D}_{\mathbb{P}}$ -modules (quasi-coherent $\mathcal{D}_\lambda$ - modules with the corresponding character of a Hecke category [1],[2] which correspond to deformed images to some ramifications which can be classified by the theorem of correspondences to ramifications[3], where the unique geometrical pictures in field theory to different cohomological classes of the sheaves in category $\mathcal{D}^\times(\mathrm{Bun}_G(\Sigma))$, are three type of fundamental co-cycles that are geometrical objects belonging to the global Langlands category (let monodromic or not) corresponding to a system $Loc_{L_G}(E^\times)$, of the objects included in a category that involves a category of quasi-coherent sheaves on $\mathcal{D}G$, of certain fibers on the generalized flag manifolds that are λ -twisted D -modules of the flag variety G/B.

These quotients of cohomology classes on derived sheaves are generalized Verma modules [2] that in the ambit of solutions on the space-time of the field equations and using the Recillas's conjecture [2], [4] are classification spaces of $SO(1, n+1)$, where elements of the Lie algebra $\mathfrak{sl}(1, n+1)$ are differential operators, of the field equations in space-time [5], [6]. The cosmological problem that exists is to reduce the number of field equations that are resoluble under the same gauge field *(Verma modules)* and to extend the gauge solutions to other fields using the topological groups symmetries that define their interactions. Precisely the application of the Penrose transform ${}^L\mathrm{Bun}_G$, let see which are generalized Verma modules of the Langlands geometrical equivalences $\mathcal{D}_{BRST}(Oper^{\leq n}_{L_G}(\mathcal{D}_y)) \cong \mathcal{D}^\times(Bun_G(\Sigma))$, which are demonstrated in [2]. But, the unique objects that are coefficients of the cohomological space of dimension 0, $(H^0(X, \mathcal{O}))$, [6] are the Verma modules $\mathbb{V}_\lambda(\chi), \forall\chi\epsilon\mathrm{Op}_{L_G}^{\lambda}$. This extension can be given by a global Langlands correspondence between the Hecke sheaves category $\mathcal{H}_{G^\wedge,\infty}$, on an adequate moduli stack and the holomorphic L_G - bundles category with a special connection *(Deligne connection)*. The corresponding $\mathcal{D}_{\mathbb{P}}$ - modules may be viewed as sheaves of conformal blocks (or co-invariants) (images under a generalized version of the Penrose transform of the type ${}^L\Phi^\mu(\mathcal{M}) = \mathcal{M}\boxtimes\rho^\mu(\mathbb{V})$) naturally arising in the framework of conformal field theory as isomorphisms between cohomological spaces of orbital spaces of the space-time.

Finally and searching to extend the structure of the holomorphic bundles to the

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meromorphic context, are obtained some moduli space identities [7] through line bundles of critical level and extend these to a line bundle $\tilde{\mathcal{L}_\lambda}$[2] to obtain cohomological classes solution of singular components of the Hitchin space-time (we consider the complex Riemannian manifold (non-compact manifold with singularities) as a Hitchin moduli space) using as basis a Higgs fields moduli space $\mathcal{M}_{Higgs}(G, C)$, to the obtaining meromorphic solutions to the corresponding enhanced part of the connection (singular part of the connection) or irregular ramification [3]). In this case the moduli space is the decomposition of the space-time as images in the dual by the Penrose transform which can be varieties where their moduli components can be super-projective spaces, for example
$\mathcal{M}(0, \mathbb{P}^3) \cong \mathbb{P}^{3|4}$ [1], [7].

[2] In $\tilde{\mathcal{L}}_\lambda = \mathcal{L}_\lambda \otimes p^*$. Here $\tilde{\partial} + \mathbb{Q}$, can be viewed as the connection of Deligne+other thing, [2] belonging to one "twisted" sub-category of $\mathcal{D}$ - modules on the moduli stack with eigenvalues $E\ |_{X \setminus \{y1, \ldots, y_n\}}$ • Precisely $\mathrm{D}_{coh}({}^L Bun, \mathcal{D}) \cong Ker(U, \tilde{\partial} + \nabla_s)$,then their images under the inverse Penrose transform are elements in sheaves of the category $\mathcal{D}_{BRST}(Oper^{\leq n}_{LG})$,since by [1] ,[2] $\mathbb{Q}^2_{BRST} = 0$, which is equivalent to the application of Cousin cohomology and their involved twistor transform haves kernel isomorphic (this could be in $Z(\mathfrak{g}_{\mathcal{K}_c})$) to $\mathrm{FunOp}_L(\mathcal{D}^\times)$. By the *Opers* theory $\mathrm{Op}_L(\mathcal{D}^\times) \cong \mathrm{proj}(\mathcal{D}^\times) \times \oplus \Omega_{\mathcal{K}}^{\otimes(d_j+1)}$, where $\Omega_{\mathcal{K}}^{\otimes n}$, is the space of n - differentials on $\mathcal{D}^\times$, and $\mathrm{proj}(\mathcal{D}^\times)$,is the $\Omega_{\mathcal{K}}^{\otimes 2}$ - torsor of projective connections on $\mathcal{D}\times$, which is conformed ∇_s. complex variable.

[3] This is much seemed to the analytic continuation studied in complex variable. In this case is more complicated, since $\nabla +$ *ramifications*, can be viewed as images under functors of the type $\Phi +$*Geometrical hypothesis*, using our integral transforms.

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