Geometrical Langlands Ramifications and Differential Operators Classification by Verma Module Extensions

Prof. Dr. Francisco Bulnes
(Department of Research in Mathematics and Engineering, TESCHA, Federal Highway Mexico-Cuautla Tlapala "La Candelaria", Chalco. State of Mexico, P. C. 56641, Mexico.)
E-mail: francisco.bulnes@tesch.edu.mx

Studies realized to the differential operator classification have been realized using the generalized Verma modules as classifying spaces defined by the geometrical Langlands correspondences through of functors characterized for integral transforms to define the equivalences between geometrical objects of holomorphic bundles and objects of an algebra of operators. Likewise are characterized the Lie algebras of these differential operators under the Hecke categories and their classifying spaces as Verma modules extensions. Likewise, is had the following result:

Theorem 1. (F.Bulnes). *The derived category of quasi-G- invariants $D_{G/H}-$ modules formed with the extended and generalized Verma modules given for ${}^L\Phi^{\mu}({}^L(\mathcal{M})) = \mathcal{M} \boxtimes \rho^{\mu}(\mathbb{V}), \forall \mathbb{V} \in (Loc_L)$, can be identified for a critically twisted sheaves category of D-modules on the moduli stack $\mathrm{Bun}_{G,y}, \forall y \in X$ (singularity) identified by the Hecke category $\mathcal{H}_{G,K,y}$, (geometrical Langlands correspondence), if this is an image of integral transforms acting on ramifications of the Hecke category $\mathcal{H}_G, \forall \lambda \in \mathrm{h}*$(for example $\mathcal{H}_{G,\lambda}$) on the flag manifold G/B, with weight corresponding to twisted differential operators on $\mathrm{Bun}_{G,y}$.*

Key words: Langlands correspondence, Hecke sheaves category, moduli stacks, Verma modules, generalized D-modules, Verma Module Extensions.

2010 AMS Classification. 53D37; 11R39; 14D24; 83C60; 11S15.

References

[1] F. Bulnes, Geometrical Langlands Ramifications and Differential Operators Classification by Coherent D-Modules in Field Theory, Journal of Mathematics and System Sciences, 3, (10), pp491–507. https://doi.org/10.17265/2159–5291/2013.10.002

[2] Bulnes, F. (2018). Cycles Cohomology and Geometrical Correspondences of Derived Categories to Field Equations. JOURNAL OF ADVANCES IN MATHEMATICS, 14(2), 7880–7892. https://doi.org/10.24297/jam.v14i2.7581

[3] F. Bulnes, Integral Geometry Methods in the Geometrical Langlands Program, SCIRP, USA, 2016. ISBN: 978-1-61896-140-2.