International Journal of Mathematical Research
ISSN(e): 2306-2223/ISSN(p): 2311-7427

URL: www.pakinsight.com

D_X-SCHEMES AND JETS IN CONFORMAL GRAVITY USING INTEGRAL TRANSFORMS

Francisco Bulnes[1†] --- **Sergei Fominko**[2]
[1]*Head of Research Department in Mathematics and Engineering, TESCHA, Mexico*
[2]*Department of Mathematics, Pre-Carpathian University, Ivano-Frankivsk, Ukraine*

ABSTRACT

A $\mathcal{D}_X$ –scheme is a scheme equipped with a flat connection over a smooth scheme on a base field. The flat connection equipment is a characterization of this scheme to construct through isomorphisms between commutative algebras and formal moduli problems the conformal images of the space-time that are solutions in conformal field theory. If are considered the $\mathcal{D}_X$ –schemes and their particular tools, the jets, these determine conformal blocks of space-time pieces that are invariant under conformal transformations. These conformal block of space-time pieces determine a homogeneous degree factor that characterizes the solutions in a complex Riemannian model of the space-time of the field equations to certain tensors of the Weyl curvature. Finally, is demonstrated that the algebra belonging to the $\mathcal{D}_X$ –schemes to the mentioned formal moduli problem is the image under a generalized Penrose transform that in the conformal context of many pieces of the space-time, has a structure as objects in commutative rings of $CAlg_k$ each one.

Keywords: Cohomologies, Commutative rings, Conformal blocks, Conformal gravity, DX-schemes, Jets, Spectrum functor.

Received: 22 September 2016/ **Revised:** 10 October 2016/ **Accepted:** 27 October 2016/ **Published:** 2 November 2016

1. INTRODUCTION

A cosmological problem existing is to reduce the number of field equations that are resoluble under a same gauge field (*Verma modules*) and can to extend the gauge solutions to other fields using the topological groups symmetries that define their interactions and their actions in the Universe. This extension can be given in the way of geometrical ramifications by a global Langlands correspondence between certain deformed derived categories as the Hecke sheaves category on an adequate moduli stack (physical stacks) and the holomorphic ${}^{L}G$ – bundles category with a special connection (*Deligne connection*), where this connection is a regular generalization over complex Riemannian manifold with singularities.

The corresponding D – modules may be viewed as sheaves of conformal blocks (or co-invariants) (images under a generalized version of the Penrose transform [1-3] naturally arising in the framework of conformal field theory but wanting to extend this theory to the non-commutative case and the notion of the field singularity.

We are interested in the purely conformal aspect of the field theory (in more concrete, gravity theories that are invariant under conformal transformations in the Riemannian geometry) and their field observable as traces of the

† Corresponding author
DOI: 10.18488/journal.24/2016.5.2/24.2.154.165
ISSN(e): 2306-2223/ISSN(p): 2311-7427