Institut Ruđer Bošković
ZAVOD ZA TEORIJSKU FIZIKU
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SEMINAR ZAVODA ZA TEORIJSKU FIZIKU

(Zajednički seminari Zavoda za teorijsku fiziku,
Zavoda za eksperimentalnu fiziku IRB-a i Fizičkog odsjeka PMF-a)

Some hints on the relation between quantum algebra formalism and phenomenology of deformed relativistic models

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Abstract:

In this talk we will explore the relation between noncommutative geometry, deformed relativistic models and phenomenology of Planck-scale induced curved momentum-space. Using the -Poincar Hopf algebra as guidance, we will introduce the Relative Locality framework, trying to understand the role of the Planck-scale-curved geometry of momentum space in the correlations between emission and detection times, the "travel times" for a particle to go from a given emitter to a given detector. We will then show that these Planck-scale corrections to travel times can be described as a "dual redshift" (or "Lateshift") effect. In the end, always using as case study the deformed-relativistic scenario inspired by the -Poincar quantum group, we will show that this relevant deformation of relativistic symmetries can be implemented within a Finsler geometry (a generalization of Riemannian geometry), in order to introduce in a coherent way spacetime curvature in our framework.

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