

Institut Ruđer Bošković  
ZAVOD ZA TEORIJSKU FIZIKU  
Bijenička c. 54  
ZAGREB, HRVATSKA

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SEMINAR ZAVODA ZA TEORIJSKU FIZIKU  
(Zajednički seminari Zavoda za teorijsku fiziku,  
Zavoda za eksperimentalnu fiziku i Zavoda za teorijsku fiziku PMF-a)

## **Anatomy of a deformed symmetry: field quantization on curved momentum space**

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*Datum: srijeda 25. svibnja 2011.*

*Vrijeme: 15:00 c.t.*

*Mjesto: IRB, dvorana I krila*

### **Sažetak:**

Relativistic particles with momentum space described by a group manifold provide a very interesting link between (quantum) gravity, quantum group symmetries and non-commutative field theories. I will discuss the construction of a one-particle Hilbert space from the classical  $k$ -deformed phase space (a well studied model of relativistic kinematics with curved momentum space) and show how curvature in momentum space leads to an ambiguity in the quantization procedure reminiscent of the ambiguities one finds when quantizing fields in curved space-times. Moving to the multiparticle sector I will discuss how the quantum group symmetry of the Hilbert space induces additional structure which reflects in a non-trivial, momentum-dependent statistics. The richer structure of the deformed Fock space allows for the possibility of entanglement between the field modes and "planckian" degrees of freedom.

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