

Seminarium Zakładu Fizyki Teoretycznej

Departament Badań Podstawowych
Narodowego Centrum Badań Jądrowych

11 kwietnia 2018 r. (środa), godz.12:15
pawilon NCBJ, sala 22, Hoża 69

Prof. Jean Pierre Gazeau

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"Three examples of quantum dynamics on the half-line with smooth bouncing"

ABSTRACT:

I will present an introduction to the quantization of the half-plane based on affine coherent states (ACS). The half-plane carries a natural affine symmetry, i.e. it is a homogeneous space for the 1d-affine group, and it is viewed as the phase space for the dynamics of a positive physical quantity evolving with time. Its affine symmetry is preserved due to the covariance of this type of quantization. I will promote the interest of such a procedure for transforming a classical model into a quantum one, since the singularity at the origin is systematically removed, and the arbitrariness of boundary conditions for the Schroedinger operator can be easily overcome. Three elementary examples of applications will be presented, the quantum breathing of a massive sphere, the quantum smooth bouncing of a charged sphere, and a smooth bouncing of "dust" sphere as a simple model of quantum Newtonian cosmology.

Serdecznie zapraszamy,
M. Kowal, W. Piechocki, L. Roszkowski, J. Skalski, L. Szymanowski