

Colloquium ICMAT-UCM

SPECIAL FUNCTIONS, LIE ALGEBRAS AND RIGGED HILBERT SPACES

SPEAKER: Mariano del Olmo (Universidad de Valladolid)

DATE: Monday, December 17, 2018 - 12:30 h

VENUE: Aula Naranja, ICMAT

ABSTRACT: The aim of this talk is to present a unified picture of the connections between representations of Lie algebras, special functions, discrete and continuous bases and rigged Hilbert spaces. Each class of orthogonal polynomials is a particular representation of a Lie algebra. This is the case of the Hermite polynomials and the Heisenberg-Weyl algebra or the associated Laguerre polynomials and the Spherical harmonics with $so(3,2)$. Spaces supporting the representation of these associated algebras include discrete as well as continuous bases of which the matrix transformation is described by the orthogonal polynomials. Hilbert spaces are not apt to describe these spaces as they do not have continuous bases. These spaces are quite often used by physicists, so that it would be necessary to introduce spaces allowing both discrete and continuous bases. They are the rigged Hilbert spaces.

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