

# Colloquium ICMAT-UCM

## THE DIFFERENTIAL STRUCTURE OF QUANTUM STATES, OBSERVABLES AND EVOLUTION

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**DATE:** Friday, 2 June, 2017 - 13:00 h

**PLACE:** Aula Naranja, ICMAT (Campus de Cantoblanco, Madrid). El coloquio será retransmitido en streaming.

**ABSTRACT:** With every quantum system we associate a Hilbert space, in the Schrödinger-Dirac picture, and a  $C^*$ -algebra in the Heisenberg-Born-Jordan picture. States, observables and evolution are built out of the given linear space.

Other pictures have been elaborated, for instance, the Weyl-Wigner picture, coherent states picture, and tomographic picture.

In this talk, I shall consider as an initial datum the convex body of states. We consider its differential structure which turns out to be a stratified manifold, and describe observables and evolution in tensorial terms, so to allow for general nonlinear transformations. To avoid technicalities, we shall mostly consider qubit and qutrit.

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