

## Thesis Defense - Entropy, Order and 2D Confinement of Hard Particles

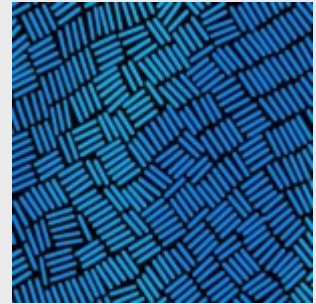
Place: Sala de Grados, Módulo 8.

When: 11:00, Tuesday, 9 May, 2017.

Program: Defense by Mr. Miguel González Pinto, [Department of Theoretical Condensed Matter Physics, Universidad Autónoma de Madrid](#).

Title: Entropy, Order and 2D Confinement of Hard Particles.

Thesis Directors: [Enrique Velasco](#) - [Department of Theoretical Condensed Matter Physics, Universidad Autónoma de Madrid](#) and [Yuri Martínez](#) - [Universidad Carlos III de Madrid](#).



**T**he work focuses on the effect of 2D confinement in systems of hard particles exhibiting liquid crystalline order. Our theoretical studies are based on Density Functional Theory (DFT) for classical fluids, in particular on the Fundamental Measure approach. We observe how the contributions of different entropic effects result in a complex competition and rich phase behaviours. Ordered phases emerge depending on the confinement and the geometry of particles: nematic (uniaxial and biaxial), columnar, smectic and crystal order. In addition, we have also studied the dynamics of pattern formation with a dynamic version of the DFT. The theoretical study is also complemented with experiments of vibrated granular rods in which ordered patterns spontaneously emerge resembling some aspects of equilibrium liquid crystals.