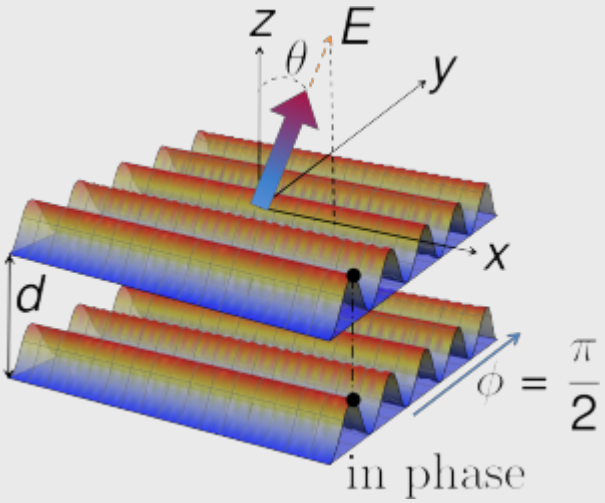
Density instabilities in 2D dipolar Fermi gases

Wednesday, 13th February 2013. 12:00-13:00



Francesca Maria Marchetti
Departamento de Física Teórica de la Materia Condensada, UAM

ABSTRACT:

Ultracold atomic gases have thus far provided a veritable playground in which to explore quantum many-body phenomena. Among the field's great successes, there is the ability to create tightly bound heteronuclear (Feshbach) molecules with a permanent electric dipole moment. In particular, the recent possibility to experimentally realise quantum degenerate dipolar Fermi gases, and confine them in 2D, paves the way for exploring many-body physics with long-ranged (dipole-dipole) interactions in low dimensional systems, with the advantage of having a cleaner and more tuneable analogue of the solid-state electron system. The central interest of this informal seminar will be the formation of density-wave phases, such as stripes, driven by the interplay between dipolar strong correlations and the architecture of the low dimensional system [1,2].

[1] M.M. Parish and F.M. Marchetti, *"Density instabilities in a two-dimensional dipolar Fermi gas"*, Phys. Rev. Lett. 108, 145304 (2012).
[2] F.M. Marchetti and M.M. Parish, *"Density-wave phases of bipolar fermions in a bilayer"*, Phys. Rev. B 87, 045110 (2013).