

CONDENSED MATTER THEORY SEMINAR

Subject: **Fermi velocity renormalization and magnetic response of graphene**

Speaker: **Dr. Tobias Stauber, ICMM (CSIC), Universidad Autónoma de Madrid**

Date & time: **Friday, November 25th, 2016 at 3:15 p.m.**

Venue: **Seminar room 1.114**

Graphene can often be described by a (2+1)-dimensional field theory that possesses interesting properties. Electron-electron interaction, e.g., leads to a renormalization of the Fermi velocity eventually restoring Lorentz invariance and the response to an external magnetic field is highly singular, being infinite at the neutrality point and zero otherwise.

In this talk, I will address both topics based on a tight-binding model and thus avoiding possible ambiguities related to the band cutoff and/or chiral anomalies. In the case of Fermi velocity renormalization, I show that self-screening effects need to be included in order to describe the experimental data. In the case of the magnetic response, lattice effects will lead to a finite paramagnetic plateau around the neutrality point and the role of Berry curvature and quantum metric is addressed.