
SIMON BECKER, University of Cambridge

Graphene in magnetic fields

Using semiclassical (with the strength of the magnetic field as the small parameter) and spectral methods we study the properties of graphene in magnetic fields with a simple quantum graph model. From the semiclassical analysis, we obtain a geometric description of the density of states which can be used to study magnetic oscillations such as the de Haas-van Alphen effect. We finally provide an outlook on 2D models for graphene in a magnetic field and related configurations such as bilayer graphene. This talk is based on joint work with M Zworski, as well as R Han and S Jitomirskaya.