M A T H E M A T I C A L P H Y S I C S S E M I N A R

Rutgers University
Hill Center - Room 705

Vieri Matropietro, Università di Roma "Tor Vergata"
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Universality of conductivity in interacting graphene

Abstract

The Hubbard model on the honeycomb lattice describes charge carriers in graphene with short range interactions. While the interaction modifies several physical quantities, like the value of the Fermi velocity or the wave function renormalization, the a.c. conductivity computed via Kubo Formula has a universal value independent of the microscopic details of the model: there are no interaction corrections, provided that the interaction is weak enough and that the system is at half filling. We give a rigorous proof of this fact, based on exact Ward Identities and on constructive Renormalization Group methods. Joint work with A.Giuliani and M.Porta.