



ICTS Seminar

Title : Renormalization group study of systems with quadratic band touching

Speaker : Subroto Mukerjee (Indian Institute of Science, Bengaluru)

Date : Wednesday, July 07, 2021

Time : 3:00 pm (IST)

Abstract : I will describe the effect of interactions on a system with a single quadratic band touching point. I will focus on the situation in which the Fermi energy is exactly at the touching point and can be thought of as being at a Lifshitz transition. The interactions will be treated perturbatively within the renormalization group (RG) scheme. At the one-loop level a repulsive interaction will be shown to be marginally relevant and an attractive interaction marginally irrelevant, in contrast to what is encountered in a regular Fermi liquid. The results obtained from the RG calculation will be corroborated by a study of a microscopic model whose ground state and Green's functions can be obtained exactly. I will show that away from the transition the system displays an instability towards forming an excitonic condensate.

Reference: J. Shah and S. Mukerjee, Phys. Rev. B 103, 195118 (2021)

Venue : Please click on the below link to join the meeting

<https://us06web.zoom.us/j/82990966036?pwd=ZGJBYS05rK3hNb0RrTW5ZdXNTMDF3QT09>

Meeting ID: 829 9096 6036

Passcode: 043106

International Centre for Theoretical Sciences - TIFR
Survey No. 151, Shivakote Village, Hesaraghatta Hobli, Bengaluru (North) - 560089
Tel: +91 80 4653 6000 Fax: +91 80 4653 6002
Email: academicoffice@icts.res.in Website: www.icts.res.in