



Physical Research Laboratory, Ahmedabad

Colloquium 15-14

Speaker: Dr. Ipsita Mandal
Postdoctoral Researcher, Perimeter Institute for Theoretical Physics, Canada.

Title: “UV/IR mixing in non-Fermi liquids”

Time: Wednesday, 28 October 2015, 16.00 hrs.

Venue: K. R. Ramanathan Auditorium, PRL

Abstract

We devise a renormalization group analysis for quantum field theories with Fermi surface to study scaling behaviour of non-Fermi liquid states in a controlled approximation. The non-Fermi liquid fixed points are identified from a Fermi surface in $(m+1)$ spatial dimensions, while the co-dimension of Fermi surface is also extended to a generic value. We also study superconducting instability in such systems as a function of dimension and co-dimension of the Fermi surface. The key point in this whole analysis is that unlike in relativistic QFT, the Fermi momentum K_F enters as a dimensionful parameter, thus modifying the naive scaling arguments. The effective coupling constants are found to be combinations of the original coupling constants and K_F .

The Speaker

Dr. Ipsita Mandal did her B.Sc. (2005) in Physics from the Jadavpur University, Kolkata and Integrated M.Sc., Ph.D. (2008) from Harish Chandra Research Institute, India. Her research interest lies in the fields of Theoretical Condensed Matter Physics (Strongly Correlated Electrons, Unconventional Superconductivity, Majorana Fermions, Entanglement Entropy), String Theory (Black Hole Physics, Galilean Conformal Algebras and their supersymmetric extensions). Presently she is a Postdoctoral Researcher at the Perimeter Institute for Theoretical Physics, Canada.

Tea at 15:30 hrs.

ALL ARE WELCOME

