GIAN @ NIT GOA

10 Days Course on

The Field Theory of Classical and Quantum Phase Transitions

3 July 2017 to 13 July 2017

MHRD Govt. of India

सत्यमेव जयते

Organised by

Dept. of Humanities & Sciences

NIT Goa

Overview: Quantum Field Theory (QFT) is a broad mathematical and conceptual framework for contemporary elementary particle physics which also finds applications in other fields of physics, like for example, solid state physics, critical phenomena in magnetic systems and superfluids, quantum phase transitions, etc. In a rather informal sense QFT is the extension of quantum mechanics (QM), dealing with particles, over to fields, i.e. systems with an infinite number of degrees of freedom. In this lecture QFT will be used to study phase transitions in condensed matter systems both at the classical and quantum levels, with emphasis in magnetic and superfluid systems. Other topics in contemporary condensed matter physics will also be addressed, namely, graphene and topological states of matter (topological insulators and superconductors, Weyl semi-metals, etc,)

Course Objectives

The objective of the course is to

- To provide the understanding on principles and concepts in quantum mechanics.
- To provide understanding to the use of classical and quantum field theories with focus in condensed matter physics
- To develop the ability to identify and solve physical problems through field theory
- To update the participant with the application of quantum field theory in current research.

Who can attend?

- Students at all levels (BTech/MSc/MTech/PhD) or Faculty from reputed academic institutions and technical institutions.
- Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories

Important Dates

- Last date for receiving applications: 15 June 2017
- Intimation to participants: 20 June 2017
- Course Dates: 3 to 13 July 2017

Registration

- Participants from abroad : US $500
- Participants from Industry: Rs. 8000/-
- Participants from Academic/Research Organisations: Rs 7,000/-
- Students and research scholars: Rs.2000/-
- (For SC/ST students: Rs. 1000/-)
- The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges and free internet facility.
- The participants will be provided with accomodation and food on payment basis.
- Payment should be made in the form of Demand Draft to be paid in favor of "The Director, NIT Goa". The DD together with registration from should be sent to
- Dr. Saidi Reddy Parne,
  Coordinator ,
  National Institute of Technology Goa
  Farmagudi, Ponda, Goa-403 401, India
  Phone No.: 0832-2404201, Fax: 0832-2404202 Mob: 09049108036, e-mail: psreddy@nitgoa.ac.in

Teaching Faculty

Prof. Flavio S. Nogueira

Dr. Flavio S. Nogueira is a German-Brazilian physicist specializing on the application of quantum field-theoretic methods to condensed matter systems. His recent publications deal mostly with topologically protected quantum states of matter. After his PhD in Brazil he worked as a researcher at the Center for Theoretical Physics of the École Polytechnique, Palaiseau, France, before joining the Institute for Theoretical Physics of the Free University Berlin in 2000, where he worked as a lecturer and researcher until 2011. After 2011 he worked at Faculty of Physics and Astronomy of the Ruhr-University Bochum. Since 2015 he is research associate at the Leibniz Institute for Theoretical Solid State Physics in Dresden."

Dr. P.S. Reddy is an Assistant Professor of Physics at NIT Goa. Dr. P. S. Reddy's research expertise is on Sensors, Photonics and Renewable energy. Prior to joining NIT Goa, he worked as a sensors specialist at Pricol Technologies limited, Coimbatore. He has obtained his Ph. D from NIT Warangal. He has authored several papers in these areas in reputed journals.

Course Coordinators

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