



Physical Research Laboratory, Ahmedabad

Public Lecture

- Speaker:** Prof. Ganapathy Baskaran
SERB Distinguished Fellow, The Institute of Mathematical Sciences, Chennai and Distinguished Visiting Research Chair, Perimeter Institute for Theoretical Physics, Waterloo, Ontario, Canada.
- Title:** "Superconductivity at Crossroads"
- Time:** Monday, 11 April 2016, 18.00 hrs.
- Venue:** K. R. Ramanathan Auditorium, PRL

Abstract

The field of superconductivity, hundred and odd years young, is witnessing remarkable developments and changes. Its history is marked by surprises and anticipations. Once BCS theory was in place, the depth and relevance of this quantum phenomenon began to emerge. It inspired Nambu, Anderson and Higgs to discover an universal mass generation mechanism for elementary particles, crowned by a recent experimental discovery of Higgs particle at LHC. High T_c superconductivity in curates discovered in 1986, a milestone, lead to RVB theory and emergent gauge fields. It opened doors to novel quantum entanglement structures, a world of quantum phases and phenomena. New theoretical developments are in place. Another recent milestone is an experimental discovery of superconductivity with a $T_c \sim 203$ K, in molecular solid H_2S under pressure. Young superconductivity is at cross roads.

The Speaker

Prof. Ganapathy Baskaran did his M.Sc. from the American College, Madurai (1970) and obtained Ph.D. degree (1975) from the Indian Institute of Science, Bangalore. He has held the position of Reader, Department of Physics, University of Madras (1979-82), Visiting Professor at SISSA and ICTP, Italy (1982-84), Research Staff, Physics Department, Princeton University (1984-87), and Professor of Physics, Institute of Mathematical Science, CIT Campus, Madras (1987 onwards). His areas of current research interests are, Theoretical Condensed Matter Physics and Theoretical Biology. Prof. Baskaran's contributions lie in the fields of (i) quantum theory of spin chains, (ii) fractional quantized Hall effect, (iii) high-temperature superconductors and strongly correlated electron system, (iv) random lattice gauge theory; and (v) optimization problems. He has made seminal contributions to the development of the resonating bond theory of high-temperature superconductivity in strongly correlated electron systems. His work with Prof. P. W. Anderson which formulates the resonating valence bond theory as a local gauge theory has opened up new directions in the field. Prof. Baskaran has co-edited 3 Volumes on Strongly Correlated Electron Systems (World Scientific, Singapore). Prof. Baskaran received Kastler Prize (1983) and S. S. Bhatnagar Prize (1990). He is a Fellow of the Indian Academy of Sciences, Bangalore (1988) and the Indian National Science Academy, New Delhi (1991). He is the elected, Fellow of the Third World Academy of Sciences (2008). He has Honored with Distinguished Alumni Award of the Indian Institute of Science, Bangalore for the Centenary Year 2008.

High Tea at 17:30 hrs.

ALL ARE WELCOME

