

Colloquim # 246

Title: The Quantum and the Continuum: Einstein's Dichotomous Legacies

Author: Prof. Parthasarathi Majumdar

Affiliation: Ramakrishna Mission Vivekananda University, Belur, India



About the speaker : Prof. Parthasarathi Majumdar is a senior professor in Physics department at Ramakrishna Mission Vivekananda University, Belur, India. Born in 1953, Prof Majumdar attained his doctorate from Brandeis University, in the year 1981. He worked as a post doctoral fellow at Tata Institute of Fundamental Research, Mumbai (1981-83), Saha Institute of Nuclear Physics (SINP), Kolkata (1983-85) and University of Maryland (1987-89). He was appointed as a faculty in SINP (1985-91), in Institute of mathematical sciences at Chennai.(1991-2004) and SINP (2004-2012). His recent research includes: Entropy of Quantum Black Holes with 'Quantum Hair', Thermal Holography and Stability of Quantum Black Holes, Quantum Description of Radiant Black Holes, Application to Gravitational Collapse of Neutron Stars, Extremal Black Holes – Geodesics and Stability, Possible Violation of Lorentz Invariance at High Energies, Kalb-Ramond Fields: Interaction with Electromagnetism and Gravity, Higgs Field Instabilities Under Various Circumstances and Lense-Thirring Effect in the Strong Gravity Regime. His achievements includes: Falkoff Award for excellence as a Teaching Assistant, Brandeis University, 1977, Center for Theoretical Physics Fellow, University of Maryland, 1987-89, Associate member, International Center for Theoretical Physics, Trieste, Italy, 1993-1998, Senior Visiting Research Fellow, Jesus College, Oxford, Michaelmas Term 2011, Visiting Professor at Rudolf Peierls Centre for Theoretical Physics, Oxford University, Michaelmas Term 2011. He was also a visiting Professor, Indian Institute of Science Education and Research Kolkata, Spring Semester 2011. In his academic career Prof. Majumdar has guided many P.hd. Students, 11 of them have already completed their work and two of them are in continuation of their work. More than 90 papers of Prof. Majumdar have been published in various referred journals .

Abstract: This talk begins with a summary of some of Einstein's seminal contributions in the quantum domain, like Brownian motion and the Light Quantum Hypothesis, as well as on the spacetime continuum enshrined in the theories of special and general relativity. We then attempt to point to a possible dichotomy in his thinking about these two apparently disparate aspects of physics, which must have been noticed by him, but was not much discussed by him in the public domain. One may speculate that this may have had something to do with his well-known distaste for the probability interpretation of quantum mechanics as a fundamental interpretation. We argue that theorems ensuing from Einstein's general relativity theory itself contain the seeds of a dramatic modification of our ideas of the Einsteinian spacetime continuum, thus underlining the dichotomy even more strongly. We then survey one modern attempt to resolve the dichotomy, at least partly, by bringing into the spacetime continuum, aspects of quantum mechanics with its underlying statistical interpretation, an approach which Einstein may not have thoroughly enjoyed, but which seems to work so far, with good prospects for the future.

Schedule: