

# Nobel Colloquium



IIT ROPAR

20<sup>th</sup> November, 2015 | 2:30 pm

Lecture Hall- 3

**Burning of the Sun & Turning of the Earth:**

**Probing Nature with Neutrinos**

Fusion reactions in the sun produce heat and light – and neutrinos. Is the solar model correct? Are we receiving the expected number of neutrinos on earth? Neutrinos are also produced in the earth's atmosphere by cosmic rays. We expect these to be of the same number from all directions. Is this what we see? Experiments to address these issues – involving very talented scientists and engineers – led to results which imply that neutrinos are massive particles, when it was commonly thought otherwise. The Physics Nobel Prize of 2015 was awarded to Takaaki Kajita and Arthur B. McDonald for their leadership of two of these experiments. We begin with a brief introduction to neutrinos and their properties. We next turn to the experimental results that establish they have non-zero mass. What other properties of neutrinos are known? What are the known unknowns? Where do we go from here? A brief overview is provided.



**Prof. Amitava Raychaudhuri**

Prof. Amitava Raychaudhuri is a renowned theoretical particle physicist. He obtained his PhD (1977) from the University of Maryland. After postdoctoral work at the University of Oxford and Tata Institute of Fundamental Research, Mumbai, he joined the University of Calcutta and later became the Sir Tarak Nath Palit Professor. During his tenure there, he was Scientific Associate (1983-84) at CERN, Senior Indo-US Fulbright Fellow (1988-89) at the Lawrence Berkeley Laboratory, Senior Marie Curie Fellow (1994) at the University of Cambridge, and Visiting Professor (1998) at the Oklahoma State University. He also served Harish-Chandra Research Institute, Allahabad (2005-2011) as the Director. He obtained the Shanti Swarup Bhatnagar Prize (1997) for Science and Technology, the highest science award in India, in the Physical Sciences category, the J.C. Bose fellowship and the INSA Young Scientist Award (1982). He is a Fellow of the Indian National Science Academy, National Academy of Science, Allahabad and the Indian Academy of Science, Bangalore. He was also a two-term senior associate of the Abdus Salam International Centre for Theoretical physics (ICTP), Trieste, Italy. In 2005, he was conferred the honor of International Alumnus of the Year by the University of Maryland Alumni Association.