



भौतिक अनुसंधान प्रयोगशाला, अहमदाबाद

Physical Research Laboratory, Ahmedabad

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72_PRL Ka Amrut Vyakhyaan

Wednesday, 14 December 2022

@ 04:00 PM (IST)

**“Propelled by quests:
Gravitational wave science”**

Prof. Tarun Souradeep

Director
Raman Research Institute,
Bangalore



https://youtu.be/iSxE_PdP048



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Title: “Propelled by quests: Gravitational wave science”

Speaker: Prof. Tarun Souradeep

Director, Raman Research Institute, Bangalore.

On

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Abstract

Scientific quests, especially grand ones, have always pushed the boundaries of scientific & technological capability that eventually has impacted our daily lives. Deeper recognition of this aspect of fundamental science would lead to its broader acceptance in any society and its nation. The talk offers but a glimpse of this primarily through quests that the speaker has been personally involved from India. Talk highlights technology that enabled the recent discovery of gravitational waves from astrophysical bodies with LIGO, or that required for the ongoing quest to discover primeval gravitational waves from the birth of our Universe.

The Speaker

Prof. Tarun Souradeep graduated as an engineer from IIT Kanpur. After short stint in automobile design decided to pursue a PhD in Gravitation and Cosmology. He has built and led a cosmology subgroup on Cosmic Microwave background (CMB) studies. Souradeep led the sole Indian group within the international team of the Planck CMB space mission of the European Space Agency. His contribution to science has received international recognition. He has been elected fellow of the International Society on General Relativity & Gravitation in 2013 and is a co-recipient of the Special Breakthrough Prize in Fundamental Physics 2016, Gruber Cosmology prize 2016 for the recent discovery of gravitational waves. He is also recipient of a number of awards in India, including, Swarnajayanti fellowship, NASI-Scopus award, B.M. Birla Prize, Vikram Sarabhai research award, a fellow of the Indian Academy of Sciences and the National Academy of Sciences, India. He served as the spokesperson for the LIGO-India mega-science project for the construction and operation of gravitational wave observatory on Indian soil up until April 2022.



About PRL

The Physical Research Laboratory (PRL), known as the “cradle of space science” in India, is one



of the premier research institutes founded in 1947 by Prof. Vikram Sarabhai, a renowned Cosmic Ray Scientist, a great visionary and institution builder. PRL played a seminal role in producing a highly motivated cadre of space scientists and the technologists of highest international repute. The first scientific rocket launched from Thumba on 21st November-1963 and many other rockets launched thereafter contained payloads developed at PRL. Dr. Sarabhai initiated many of these scientific and technical activities at PRL which eventually led to the formation of the Indian Space Research Organization (ISRO). Therefore, PRL is known as the “cradle of space science” in India. Further, the research in the area

of Plasma Physics expanded to the formation of the Institute of Plasma Research (IPR).

As an institution PRL is unique in that it conducts fundamental research in a wide range of research areas from the Earth to the cosmos, and comprising Astronomy and Astrophysics; Solar Physics; Space and Atmospheric Sciences; Theoretical Physics; Geosciences; Atomic, Molecular and Optical Physics, Astrochemistry; and Planetary Sciences and Space Exploration. PRL is one of the rare research institutes of international repute wherein research in such diverse fields of sciences is carried out using several state-of-the-art experimental facilities that exist under one umbrella.

Along with the ongoing research, several new initiatives have been taken up during the last few years. The Multi-Application Solar Telescope (MAST) at Udaipur Solar Observatory has been operationalized. PRL initiated scientific programmes in frontier areas of research, which include a search for exo-planets, laboratory studies of interstellar grains, laboratory synthesis of cold astro-molecules and experimental studies in the field of quantum optics. PRL is also developing several scientific payloads as a part of ISRO’s larger vision and contributing to roadmap for competitive scientific exploration of the solar system and beyond. In particular, PRL has been contributing significantly not only in building instruments for space missions, such as Chandrayaan-1, Chandrayaan-2, AstroSat and upcoming Aditya-L1, Chandrayaan-3 and planetary and space missions, but also by bringing out new and insightful science results.

PRL contributes to several national and international research programmes and to human resource development through its Doctoral and Post-Doctoral Programmes, capacity building programmes, such as UN Course on Space Science, and science and engineering internship programmes. PRL contributes significantly to society through its Outreach Programmes by periodically organizing science exhibitions and Open Houses, planned visits of students of various school and college to PRL, and popular talks at various institutions to not only share the excitements of the advancements of contemporary scientific findings but also to encourage students to take up sciences as their research career.

