भौतिक अनुसंधान प्रयोगशाला, अहमदाबाद

Physical Research Laboratory, Ahmedabad

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44_PRL Ka Amrut Vyakhyaan

Wednesday, 01 June 2022

@ 04:00 PM (IST)

"Hunting elephants in a room: new ways to search for dark matter and other adventures"

Prof. Dmitry Budker

Section Leader, Helmholtz Institute, Johannes Gutenberg University Mainz, Mainz, Germany and

Professor of Graduate School, University of California at Berkeley, USA.

https://youtu.be/--tIYpmsCZM

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Abstract

We will discuss some of the modern and perhaps unexpected ways to solve major problems of modern physics. Some involve table-top science and some involve accelerators.

The Speaker

After receiving Ph.D. in physics from UC Berkeley in 1993, Prof. Budker continued his post-doctoral research until appointed in 1995 as a faculty in the same university. Born in the former USSR, he was a student at the Novosibirsk State University from 1980 until 1985 before moving to the USA.

In 1994, Prof. Budker received the American Physical Society Award for Outstanding Doctoral Thesis Research in Atomic, Molecular, and Optical Physics. He is the recipient of several international awards and recognition such as National Science Foundation Career Award, University of California President's Research Catalyst Award, American Physical Society Outstanding Referee, R&D 100 Award for Laser Detected Magnetic-Resonance Imaging, DFG Reinhart Koselleck Principal Investigator, ERC Advanced Grant, Norman F. Ramsey Prize, Erwin Schrödinger Award of the Helmholtz Association etc. to name a few. He has been a Fellow of the American Physical Society.

Prof. Budker's research interests are related to study of discrete symmetry violations and experimental search for temporal variation of fundamental constants using the methods of modern atomic physics. Some of his other research involve experimental condensed-matter physics, nuclear magnetic resonance, and applications of nonlinear optical phenomena in resonant vapors and in color centers in diamond to sensitive magnetometry.

Prof. Budker has co-authored five textbooks that are widely used in Atomic and Molecular Physics, and published several scientific review articles and more than 200 research articles in the peer reviewed journals having about 24000 citations.

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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 astromolecules 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.

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