



भौतिक अनुसंधान प्रयोगशाला, अहमदाबाद

Physical Research Laboratory, Ahmedabad

[HTTPS://WWW.PRL.RES.IN](https://www.prl.res.in)

PRL Ka Amrut Vyakhyaan-10

Wednesday, 06 October 2021

@ 17:00 hrs. (IST)



<https://youtu.be/qljBjbt4P3o>

PRL@75



INDIA@75

PRL ka Amrut Vyakhyaan-10

Title: “A Song for the SOL”

Speaker: Dr. Madhulika Guhathakurta

Senior Advisor for New Initiatives, Heliophysics, NASA GSFC/HQ Program Scientist

On Wednesday, 06 October 2021

Abstract

The World Space Week (WSW) is an international event celebrated every year from the 4th to 10th of October as declared by the United Nations General Assembly in 1999. This event commemorates the contributions of space science and technology to the betterment of the human condition with a central theme each year. In 2021, World Space Week is dedicated to the theme of “Women in Space”. Befitting to the theme to inspire the next generation and celebrating the accomplishments and contributions of women to the space sector, the 10th PRL ka Amrut Vyakhyaan is organized to mark the celebration of world space week. The vyakhyaan will be delivered by Dr. Madhulika Guhathakurta who is a heliophysicist and has worked as an educator, scientist, mission designer, directed and managed science programs at NASA, and has built instruments for spacecraft. She has been a long standing eclipse enthusiast and has led missions to study 11 total solar eclipses across the world. She is currently pushing new boundaries by using Artificial Intelligence/Machine learning for furthering our understanding of science and exploration. This talk will be a short journey through her career.

The Speaker

For the past two decades, Dr. Guhathakurta has enabled the development of Heliophysics as an integrated scientific discipline from which fundamental discoveries about our universe provide direct societal benefits. As the Lead for the Living With a Star (LWS) program for 16 years since its initiation in 2000 she made possible the flagship missions (e.g. the Solar Dynamics Observatory, Van Allen Probes, Solar Orbiter Collaboration with European Space Agency and Parker Solar Probe), many other missions, including STEREO that would revolutionize our understanding of how the Sun shapes space weather in the solar system.

To accelerate innovation and scientific discovery she created funding mechanisms to shepherd traditional domain scientists out of their comfort zones to create LWS system science known as the Targeted Research & Technology program and Focused Science Teams that foster competitive, yet collaborative environments that promote the crosspollination of science ideas and technology. To nurture the next generation of leaders in Heliophysics, she created the Jack Eddy Fellowship Program which has become an important channel for the professional growth of promising researchers.

Since 2017, she has championed the growth of NASA’s Frontier Development Lab (FDL), both in terms of the breadth of problem areas tackled, as well as in the number of agency and industry partners. The types of innovative solutions include virtual telescopes, data fusion, edge computing, and autonomy and this approach will have an enduring imprint on the way science and exploration is carried out by future generations. Presently, she is back at NASA HQ where she is a program scientist and also splitting her time as a Senior Advisor for New Initiatives at the Heliophysics Division, GSFC.



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.

