# भौतिक अनुसंधान प्रयोगशाला, अहमदाबाद

## Physical Research Laboratory, Ahmedabad

https://www.prl.res.in/prl-eng/prlat75

## *PRL Ka Amrut Vyakhyaan-37*

## Wednesday, 13 April 2022

## @ 04:00 PM (IST)

### "ASTRO 3D "

### Prof. Lisa Jennifer Kewley

**Professor**

**Australian National University, Australia.**

https://youtu.be/tx65NMaTYDU

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## Title: "ASTRO 3D"


## Speaker: Prof. Lisa Jennifer Kewley

**Australian National University, Australia.**


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**Abstract**

**The ARC Centre of Excellence for All Sky Astrophysics in 3 Dimensions (ASTRO 3D) is a $40M Centre of Excellence, which is producing a comprehensive picture of the accumulation of mass, angular momentum, and the chemical elements from the first stars, to (and including) the Milky Way. Our surveys include the measurement of the power spectrum at the Epoch of Reionization with the Murchison Widefield Array, large HI surveys with the Square Kilometre Array Pathfinder, the ongoing Australian optical integral field surveys of $10^5$ galaxies, a large galaxy evolution program combining HST, Keck, and ESO spectroscopy of galaxies from z=6 to z=0.5, and the major Australian Galactic Archaeology program to track the chemical history and accretion history of our Milky Way using the Anglo Australian Telescope. "I will describe the recent discoveries made in ASTRO 3D, our preparation for JWST spectral analysis, as well as providing an update on our ambitious equity and diversity programs, and our nationwide education and public outreach programs."**


**The Speaker**

**Prof. Lisa Jennifer Kewley is a Professor and Australian Research Council Laureate Fellow at the Australian National University. Prof. Kewley obtained her Ph.D. in 2002 from the Australian National University on the connection between star-formation and supermassive black holes in galaxies. She was a Harvard-Smithsonian Center for Astrophysics Fellow and a NASA Hubble Fellow. Her awards include the 2006 American Astronomical Society Annie Jump Cannon Award, the 2008 American Astronomical Society Newton Lacy Pierce Prize, and the 2020 US National Academy of Science James Craig Watson Medal. In 2014, Prof. Kewley was elected Fellow of the Australian Academy of Science "for her fundamental advances in understanding of the history of the universe, particularly star and galaxy formation", and in 2015, Prof. Kewley was awarded an ARC Laureate Fellowship, Australia's top fellowship to support excellence in research. Prof. Kewley is currently implementing her scientific vision through her Australian Research Council Centre of Excellence in All-Sky Astrophysics in 3D (ASTRO 3D). ASTRO 3D combines Australia's radio and optical ground-based telescopes with international 8-10m telescopes and world-wide super-computing facilities to understand the formation and evolution of matter, ionizing radiation, and chemical elements in the Universe.**

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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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