भारतीय अंतरिक्ष विज्ञान एवं प्रौद्योगिकी संस्थान

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY

तिरुवनंतपुरम/Thiruvananthapuram

IIST COLLOQUIUM

Observing the wonders of nature - from Camera Obscura to the International Liquid Mirror Telescope 4m (ILMT)

2-4-2025 | 3.00 PM | SAC Multipurpose Hall.

Prof.Jean Surdej

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Once again, Mother Nature is at the forefront of astrophysical inventions: the 'camera obscura' inspiring physicists with the principle of how a telescope works. We shall take a look at how such a camera works and how, by slightly modifying it, we can focus the light rays from a distant source onto a single point.

We will also show how, using an old record player, a pie plate, a magnifying glass and a little olive oil, you can make a liquid-mirror telescope at your institute, at least 25 cm in diameter.

Astronomers and engineers from Liège (Belgium), in association with Indian and Canadian colleagues, have built a much larger one: the 4m International Liquid Mirror Telescope (ILMT).

This innovative instrument uses a rotating mirror 4 metres in diameter, coated with a thin film of liquid mercury, to collect and focus the light. A liquid mirror telescope takes advantage of the fact that the surface of a rotating liquid naturally takes on a parabolic shape, which is ideal for focusing light rays. The reflected light passes through a sophisticated multi-lens optical corrector that produces sharp images over a wide field of view. A large-format electronic camera at the focus records the images.

The 4-metre International Liquid Mirror Telescope (ILMT) has been installed at the ARIES (Aryabhatta Research Institute for Observational Sciences) site in India's central Himalayas at an altitude of 2,450 m (Devasthal, Uttarakhand). First light was obtained on 29 April 2022 and the telescope is currently recording superb images.

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