International Liquid Mirror Telescope at Devasthal

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Why is in news? Union Minister Dr Jitendra Singh inaugurates Asia's largest 4-metre International Liquid Mirror Telescope at Devasthal in Uttarakhand

The Union Minister of Science & Technologyhas inaugurated **Asia's largest 4-metre International Liquid Mirror Telescope** at Devasthal in Uttarakhand.

The minister said, it is primarily the patronage, promotion and prioritization from Prime Minister that has enabled and emboldened the scientific fraternity to successfully try new initiatives, one after the other, in the field of science, technology and innovation, which are being rated as world class.

Aryabhatta Research Institute of Observational Sciences (ARIES) announced that the world-class 4-metre International Liquid Mirror Telescope (ILMT) is now ready to explore the deep celestial sky. It achieved its first light in the 2nd week of May 2022.

The telescope is located at an **altitude of 2450 metre** at the Devasthal Observatory campus of ARIES, an autonomous institute under the Department of Science and Technology (DST), Govt. of India in Nainital district, Uttarakhand.

There are **primarily three ?components** in a liquid mirror telescope: i) ?A ?bowl ?containing ?a ?reflecting ?liquid ?metal ?(essentially ?mercury), ii) an ?air ?bearing (or motor) ?on which ?the ?liquid mirror ?sits, and iii) a ?drive ?system.

Liquid mirror telescopes take advantage of the fact that the surface of a rotating liquid naturally takes on a **parabolic shape**, which is ideal for focusing light.

How will Liquid Mirror telescope work?

The observatory has been developed by scientists **from India, Belgium, and Canada**. The Liquid Mirror telescope is a 4-metre-diameter rotating mirror made up of a thin film of liquid mercury to collect and focus light.

Mercury is used as it is a reflective liquid and is spun so that the surface is curved into a parabolic shape which is ideal for focusing light.

To protect its distortions from the wind, it is covered by a thin transparent film of mylar.

The reflected light passes through a sophisticated multi-lens optical corrector that produces sharp images over a wide field of view.

International Liquid Mirror Telescope (ILMT) is the **country's first and largest liquid-mirror telescope**, as well as the largest in Asia.

Liquid Mirror Telescope vs Conventional Telescope:

A LMT is a **stationary telescope** whereas a conventional telescope moves along the direction of the object of interest in the sky.

A LMT will **survey and capture any and all possible celestial objects** such as stars, galaxies, supernovae explosions, asteroids and even space debris. However, a conventional captures just a piece of sky at a given point of time.

LMT comprises mirrors with a reflective liquid (ILMT has mercury as reflective liquid). On the other hand, a conventional telescope uses **highly-polished glass mirrors**.

While ILMT will be **capturing images of the sky on all nights**, conventional telescopes observe specific objects in the sky **for fixed hours only**.