The Times of India, Bengaluru, Monday, January 5, 2015, pp.06

Tests over, India set to make the 'iris' of biggest-ever telescope

Arun Ram & Anahita Mukherjee | TNN

Sometime in 2023, a 30-metre man-made 'eye' will open atop the Hawaiian volcanic dome of Mauna Kea in search of life beyond the solar system. And India would have contributed its 'iris'. Barely a month after signing in as a full partner in the $1.4 billion Thirty-Metre Telescope (TMT) project being developed by five nations, India is all set to make sensors and actuators that will keep the huge mirror of the biggest telescope in place.

"We have completed the tests," said Indian Institute of Astrophysics (IIA) scientist B Eswar Reddy. IIA, Aryabhatta institute of observational sciences (ARIES), Nainital, and the Inter-University Centre for Astronomy and Astrophysics (IUCAA) constitute the Indian arm of the consortium, which includes labs from Canada, US, China and Japan.

An artist's impression of the $1.4 billion Thirty-Metre Telescope, to be set up atop the Hawaiian volcanic dome of Mauna Kea

Edge sensors and actuators are crucial components as the huge mirror is not a single piece, but a composite of 492 hexagonal segments. Each segment is controlled by three activators and two edge sensors along each inter-segment gap to ensure accurate optical images.

Eswar told the 102nd Indian Science Congress that India plays a pivotal role in setting up the telescope with a resolution 12 times better than that of Hubble. "India will be involved in polishing the primary mirror and setting up its control system, besides developing electronics, edge sensors and actuators," he said.

The US will make the primary mirror segments and China the tertiary mirror. Canada will put in place the dome and Japan the telescope structure. TMT will strengthen the perennial search for intelligent life elsewhere, as it provides direct imaging of planetary systems. It will also help astronomers study planetary atmospheres.

While collaboration replaces competition as the mantra of space science, India is a sought-after partner. On top of the cosmic ventures, along with TMT, is the Square Kilometre Array, a next-generation radio telescope project in which India leads one of the nine packages.