

A slice of Bangalore in the world's largest telescope

Teams Work
On TMT | To Be
Operational In
Hawaii By 2020

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Graphic : MR Rajashekar

Bangalore: Questions ranging from the existence of extra-terrestrial life to the birth and fate of the universe may be answered by the Giant Segmented Mirror Telescopes (GSMTs), with diameters of over 20 metres.

Teams from Bangalore's Indian Institute of Astrophysics in collaboration with Inter-University Centre for Astronomy and Astrophysics, Pune and ARIES, Nainital, along with several international agencies are currently working on a

Thirty Meter Telescope (TMT), the first of its kind under the GSMTs slated to be operational by 2020. It'll be located at Mauna Kea, Hawaii. TMT will also identify and reveal the nature of the first stars and the earliest galaxies as well as the nature and composition of the universe. It'll be the largest telescope in the world as the 39-metre diameter European Extremely Large Telescope — an European Southern Observatory project supported by 15 EU nations — will be online only by 2022.

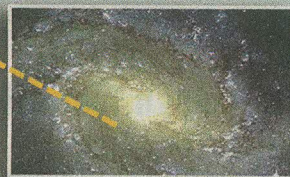
"Technology demonstration and manufacture of prototype of some critical systems are being done at participating institutes and industries in the country, and may be completed by mid-2013. The design was ready in 2010. Telescope construction will commence in 2014," B Eswar Reddy, programme director, India TMT Coordination Centre (ITCC), told TOI. Experts close to TMT say the project took a while to take off as there was a delay in funding by National Sciences Foundation of the US and agencies of other countries. "Building such a telescope requires huge cap-

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- Project led by University of California, Caltech, with agencies from Canada, Japan and China
- India's contribution is about 10% of total cost — approximately Rs 800 crore
- Jointly funded by department of atomic energy and department of science & technology
- Much of India's contributions will be through providing flagship components such as edge sensors and actuators
- A major part of observatory control software will also be part of the nation's contribution

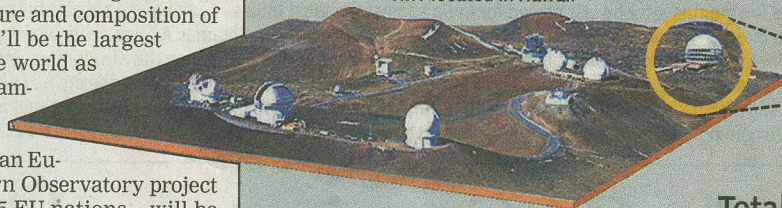


TMT will identify and reveal the nature of the first stars, earliest galaxies and nature of the universe



The Adaptive Optics technology enables TMT to correct image distortions caused by the atmosphere

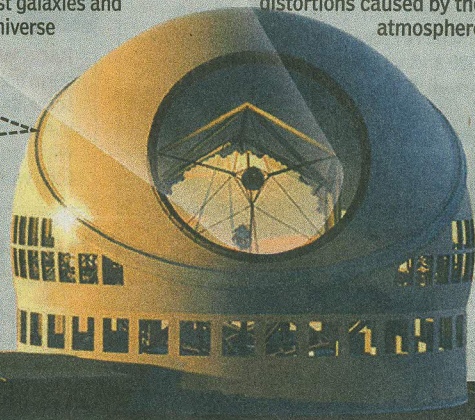
TMT located in Hawaii



Design was
ready in
2010

Construction
will start in
2014

Total cost
of project
\$1.2 billion



Source : www.tmt.org

ital, high-end technology, and exceptional sites to obtain high-quality data. That's why most 10-metre large telescopes (currently largest in the world) were built through international collaboration. All are located either in the Andes Mountains (Chile), Mauna Kea, Hawaii or Tenerife (Spain)," a scientist associated with the project said.

“ TMT is an excellent opportunity for India as future generations can pursue varied interests ranging from solar system studies to the formation of the first stars. The country's motivation to join the TMT project stems from three factors — opportunity for frontline research, technology transfer and sharing the huge cost

B Eswar Reddy | PROGRAMME DIRECTOR, INDIA TMT COORDINATION CENTRE