

# Gamma ray telescope getting ready in Leh

Analysis of the rays will help to understand different types of matter in the universe

P. Sunderarajan

**HANLE (LEH):** India is setting up a special facility here to boost global efforts in unravelling the mysteries surrounding the nature of normal and dark matter in the universe.

The Bangalore-based Indian Institute of Astrophysics (IIA), along with the Mumbai-based Bhabha Atomic Research Centre (BARC) and several other national institutions, is setting up a telescope with a 21-metre diameter collector, which will collect the gamma rays in the space. The analysis of the rays will help astrophysicists in better understanding of different types of matter in the universe.

"The gamma rays are high energy processes in the universe. Their study will help us in understanding the high energy physics close to black holes, compact objects, dark matter and high gravitational fields," said Tushar P. Prabhu, professor in charge, IIA's astronomical observatory at Hanle.

- Telescope will collect gamma rays in the space
- The observatory will be the only such one in the eastern hemisphere

Known as the Major Atmospheric Cerenkov Experiment (MACE) facility, the observatory here will be the only such one in the eastern hemisphere, and at an altitude of 4,300 metres above the mean sea level.

Hanle is considered one of the most suitable sites for such astronomical researches due to its location — high altitude and dry weather. It has an annual precipitation of less than 7 cm and thus offers a large window for observations. On an average, observations can be made for 260 days a year.

The facility is next to the IIA's Himalayan Chandra Telescope (HCT), which was set up about a decade ago. The HCT became functional in 2001 and is operated from Bangalore through a satellite-

based communication link. This telescope has already helped in discovering three galaxies with super-massive black-holes, and nature of several supernovae, and several new variable stars in our galaxy, among other things.

The effort to establish the MACE facility is being led by the BARC, in collaboration with the Tata Institute of Fundamental Research, Mumbai, and the Saha Institute of Nuclear Physics, Kolkata. It is estimated to cost about Rs. 40 crore and is expected to be ready by December 2012.

The technical feasibility of the high altitude for atmospheric Cerenkov detectors was proved by the IIA and the TIFR by setting up a smaller facility, High Altitude Gamma Ray (HAGAR) experiment in 2008.