New technology to help get sharper images of planets

EXPRESS NEWS SERVICE
AUGUST 25


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OVER THE years, astronomers across the world have had problems in observing distant objects beacuse of a shimmering effect, which is caused due to the moving atmosphere. After working on a technology for the past two years, the city-based Inter-University Centre for Astronomy and Astrophysics (IUCAA), in a collaboration with California Institute of Technology (Caltech), has come up with a new technology which can be used in small and medium telescopes. This can considerably reduce the shimmering effect, thereby making it easier for getting more sharper images and better observations.

The team working on the project was in the city to talk about this revolutionary development, which can be of immense help in reducing the amount of labour needed to make these observations. "The technology being used is that of Adaptive Optics (AO). Till today, it was being used on bigger telescopes and observatories. However, the Robo-AO that we have developed in collaboration with Caltech can help small observatories on smaller telescopes, thereby upgrading them at a much lesser cost," said Shrinivas Kulkarni, director, Caltech observatory.

The project, on which work was started around two years ago, is being supported by grants from IUCAA as well as the National Science Foundation (NSF), USA, through the advanced technologies and instrumentation programme in 2009. Also, the Caltech optical observatory (COO) has provided substantial time on the Palomar 60 inch telescope (P60) for the engineering development as well as 30 days for operational demonstration and performance verification of the technology.

Speaking about the benefits of the technology, Professor Ram Prakash said, "The technology that was available earlier, we needed astronomers to sit for every step, operate the laser beam, make observations or handle the engineering. With this new technology, everything will be automatic. The machine can be kept switched on and all the steps will be performed by the machine itself. Also, now since the functioning is completely automatic, instead of 10 observations that used to be made by the earlier technology, as many as 100 to 200 observations can be made in one night."

At present, the machine has been commissioned at the Palomar Observatory. "The cost of the technology comes up to around Rs 5 crore. With the help of this technique, a two-metre telescope will be upgraded to four metres," said Ajit Kembhavi, director, IUCAA.