Seminar, Department of Physics, Bose Institute, Kolkata

A sharp future of medium-size telescopes in the era of automated adaptive optics

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Abstract: Adaptive optics technology is crucial to achieve the full potential of ground-based telescopes. Over the last three decades, the world has witnessed the successful advent and operation of AO systems on large ground-based telescopes. The complexity and cost of AO systems have largely gone down in the last decade thanks to advances in the deformable mirror, wavefront sensor, and real-time computing technologies.

Here, we present a robust Rayleigh scattered laser-guided single conjugated adaptive optics system called SALTO, which was designed, built, and tested in the Belgian countryside on a 1-meter class telescope and an automated robotic adaptive optics system called Robo-AO for IUCAA 2m telescope. These projects aim to demonstrate the possibility of rejuvenating the scientific goals of medium-class telescopes (1-3 m) with AO technology, as well as to enable optical telecommunication from relatively poor observing sites. This talk discusses the overall study of the design of the AO system, from the optics to the control system. It also includes a description of the integration and calibration of SALTO. It concludes with the presentation of successful on-sky results at 1.55µm under 2-3'' seeing.

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