

Configuration Design for a Prototype Segmented Mirror Telescope

To cater the need of growing astronomical community of India, there is a proposal to realize a 10-12m size optical-NIR telescope, equipped with state of the art back-end instruments. With the current technology, it is not possible to realize a monolithic primary mirror required for such a large telescope. This necessitates use of smaller mirror segments aligned to act like a single mirror. Since the Segmented Mirror Telescope (SMT) is yet to be realized in India, it is essential to realize a Prototype Segmented Mirror Telescope (PSMT) of smaller size to understand the complexities of design, fabrication, assembly and testing of a SMT. This will help to reduce the cost, time and risk for realizing the full size (10-12 m) SMT.

With this in mind, design of a 7 Segment PSMT having hexagonal mirror segments of size 500mm each and overall aperture of about 1.5 m, is initiated at IIA. After considering various aspects of a PSMT, a configuration is designed which is now undergoing fabrication. Some of the mechanical aspects of the design of this PSMT are presented in this paper.