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Advances in Optical and Mechanical Technologies for Telescopes and Instrumentation II

Ramón Navarro
James H. Burge
Editors

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Introduction

Ever since the invention of the telescope, new technologies have been used in astronomy to improve observations and to eventually better understand our position in the universe.

For forty years, SPIE has organized conferences on astronomical telescopes and instrumentation. These events grew to become huge symposia with specialized parallel conferences on all major instrumental areas, such as space- and ground-based telescopes, detectors, interferometers, and adaptive optics. The increasing complexity of astronomical instrumentation resulted in the need for yet another conference dedicated to the enabling technologies. This conference is now called "Advances in Optical and Mechanical Technologies for Telescopes and Instrumentation", and was held for the first time in 2002 with 47 contributions, as part of the SPIE symposium of several conferences on astronomical telescopes and instrumentation. In 2016 the number of papers has increased to over 250. Six full days were necessary to schedule about a third of the submitted contributions for oral presentations. The other contributions were presented as poster presentations. Such a full conference week can be exhausting. The readers of these proceedings are in a more comfortable position: they can take their time to study the interesting and well written contributions from scientists, engineers and technologists from laboratories all over the world. However, they will of course miss out on the presentations, which often contain additional details and graphs and an increasing number of videos.

This volume documents the fabrication process, including test and metrology, of the optical components for LSST (United States) and the upcoming generation of extremely large telescopes. The instrumentation for this new generation of telescopes has become more complex, depending on extreme aspheres, active and adaptive optics. Photonic techniques used in optical fibres and miniaturised mechanisms for positioners allow larger surveys with multi object spectrographs. Spectroscopy benefits from improvements in volume phase holographic gratings and immersed grating techniques. New mechanisms and optical mounts were presented for atmospheric dispersion correction. High-contrast imaging can be achieved with optical retarder filters. And there is much more to explore in these proceedings.

We hope that the readers find these proceedings exciting, and that they stimulate ideas for their own research.

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We look forward to seeing you at the next conference on "Advances in Optical and Mechanical Technologies for Telescopes and Instrumentation" in Austin, Texas (United States) in the summer of 2018.

Ramón Navarro
James H. Burge

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