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Modern Technologies in Space- and Ground-based Telescopes and Instrumentation II

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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 enable better understand our position in the universe.

For almost 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 "Modern Technologies in Space- and Ground-based Telescopes and Instrumentation" 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 2012 the number of papers has increased to over 200. Six full days were necessary to schedule about half of the submitted contributions for oral presentations, seven days if you take into account the entire day with parallel sessions. The other half of the contributions was presented as posters. Several participants felt rather exhausted after this full conference week. 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 completion of the fabrication of the optical components for the James Webb Space Telescope. The test and metrology of these components is just as interesting. The next generation of extremely large ground-based telescopes requires technology development due to the large number of mirror segments. The tendency for the instrumentation for this new generation of telescopes is to become more active. 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 cryogenic space and ground-based instrumentation. 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.

We look forward to seeing you at the next conference on "Modern Technologies." in Montreal in the summer of 2014.

Ramón Navarro
Colin Cunningham
Eric Prieto

xxx