PROCEEDINGS OF SPIE

9th International Symposium on Advanced Optical Manufacturing and Testing Technologies

Large Mirrors and Telescopes

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26–29 June 2018
Chengdu, China

Organized by
Institute of Optics and Electronics, Chinese Academy of Sciences (China)

Sponsored by
COS—The Chinese Optical Society (China)
IOE—Institute of Optics and Electronics, Chinese Academy of Sciences (China)

Published by
SPIE

Volume 10837

Proceedings of SPIE 0277-786X, V. 10837

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

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Please use the following format to cite material from these proceedings:
Author(s), "Title of Paper," in *9th International Symposium on Advanced Optical Manufacturing and Testing Technologies: Large Mirrors and Telescopes*, edited by Xiaoliang Ma, Bin Fan, Yongjian Wan, Adrian Russell, Xiangang Luo, Proceedings of SPIE Vol. 10837 (SPIE, Bellingham, WA, 2019) Seven-digit Article CID Number.

ISSN: 0277-786X
ISSN: 1996-756X (electronic)

ISBN: 9781510623163
ISBN: 9781510623170 (electronic)

Published by
SPIE
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time)· Fax +1 360 647 1445
SPIE.org

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Contents

Most telescopes, and all large telescopes, work by using curved mirrors to gather and focus light from the night sky. The first telescopes focused light by using pieces of curved, clear glass, called lenses. So why do we use mirrors today? Because mirrors are lighter, and they are easier than lenses to make perfectly smooth. The mirrors or lenses in a telescope are called the â€œoptics.â€ Really powerful telescopes can see very dim things and things that are really far away. To do that, the opticsâ€”be they mirrors or lensesâ€”have to be really big. The bigger the mirrors or lenses, the more light th The large main mirror would dwarf the current generation of 26 to 33-foot (8 to 10-meter) telescopes and produce images about 10 times sharper than the Hubble Space Telescope. If fully funded, the telescope could find a home at the Las Campanas Observatory in La Serena, Chile and begin full operations by 2024. Thirty Meter Telescope (TMT). Thirty Meter Telescope. Another of the next-gen contenders for biggest optical telescope on Earth is the Thirty Meter Telescope.Â The Thirty Meter Telescope is slated to join the Keck Telescopes and other instruments on Mauna Kea in Hawaii and commence full operations by 2025-2030. Square Kilometer Array (SKA). SPDO/TDP/DRAO/Swinburne Astronomy Productions. Newer, larger telescopes are always needed to boost scientific progress, and the next generation of facilities - whether the 42m diameter optical-infrared Extremely Large Telescope, or the Square Kilometre Array of radio dishes - will represent a huge advance. We shall look at the science driving the need for such large telescopes, through history and to the present-day and beyond. Many scientific and engineering challenges are involved in the design and construction of the largest telescopes and their mirrors, and technological developments will be essential to their success. Professor Caroli Large telescopes of today are reflecting types, and this gives the instruments a number of advantages over the refracting varieties. For one, the reflecting material, typically aluminum, ensures no chromatic aberration, and this is likely due to the materialâ€™s deposition on a polished surface.Â The telescopeâ€™s large 120mm aperture improves contrast and resolution while also increasing image brightness compared to smaller 100mm or 80mm models.Â The telescope employs Celestronâ€™s performance-driven exclusive StarBright XLT multi-coating system, which boasts increased light transmission throughout the entire optical path using anti-reflection multicoated lenses, 4-element rare glass and highly-reflective multi coated mirrors. This list of the largest optical reflecting telescopes with objective diameters of 3.0 metres (120 in) or greater is sorted by aperture, which is a measure of the light-gathering power and resolution of a reflecting telescope. The mirrors themselves can be larger than the aperture, and some telescopes may use aperture synthesis through interferometry. Telescopes designed to be used as optical astronomical interferometers such as the Keck I and II used together as the Keck Interferometer (up to 85 m)