PROCEEDINGS OF SPIE

UV/Optical/IR Space Telescopes and Instruments: Innovative Technologies and Concepts VI

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Editors

25–26 August 2013
San Diego, California, United States

Sponsored and Published by
SPIE

Volume 8860

Proceedings of SPIE 0277-786X, V. 8860

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

UV/Optical/IR Space Telescopes and Instruments: Innovative Technologies and Concepts VI,
edited by Howard A. MacEwen, James B. Breckinridge, Proc. of SPIE Vol. 8860, 886001

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Please use the following format to cite material from this book:
Author(s), "Title of Paper," in *UV/Optical/IR Space Telescopes and Instruments: Innovative Technologies and Concepts VI*, edited by Howard A. MacEwen, James B. Breckinridge, Proceedings of SPIE Vol. 8860 (SPIE, Bellingham, WA, 2013) Article CID Number.

ISSN: 0277-786X
ISBN: 9780819497109

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

Printed in the United States of America.

Publication of record for individual papers is online in the SPIE Digital Library.

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Introduction

This two-day conference included a total of approximately forty papers and was organized into six separate topic sessions[1]. These topics were supported in some particular details by papers presented in the Poster Session on the evening of the second day. In turn, the six topics were arranged under three major discussion areas: status reports concerning active, programmed systems; concepts for future systems (especially when they are likely to be candidates for consideration in the National Academies 2020 Astronomy and Astrophysics Decadal Survey); and technologies for both sensors and for telescope and spacecraft subsystems and components. In detail:

1. Programmed Systems. Only one system, the James Webb Space Telescope (JWST) is sufficiently advanced in development for this session. The session was organized around an invited paper that described an overview of the status of the program, which was then amplified with a paper on the JWST science drivers, a status report on the build-up of the Integrated Science Instrument Module (ISIM), and a detailed paper on a noise reduction problem in one of the instruments. Specific status reports were not provided on the individual instruments, since there have only been minor changes since those reports were provided in detail in the 2012 Astronomical Instruments and Telescopes Conference in Amsterdam.

2. Future System Concepts. As was to be expected, this section was considerably more diverse than the preceding. Several sub-topics were included:
   - WFIRST/EUCLID. Recent mission and preliminary design studies[2] for using the recently donated 2.4 meter telescopes were presented in overview in this section, and a specific approach to developing design tolerances for the ESA EUCLID concept was provided.
   - Space Telescope Concepts and Operations. A number of concepts were outlined under this heading, including small cameras, small spectroscopic survey satellites, to 4 meter (and larger) UV-Visible-IR space telescopes. Taken as a whole, most of the optical spectrum was considered in this general section, and major structural elements (specifically light shields) and possible interactions with the infrastructures needed to support NASA human exploration missions were discussed.
3. Technologies. This section addressed:
   - Sensor and detector arrays, including aspects such as radiation damage, clocking, coatings, and filters.

[1] Note that the sixth and final session was joint with Conference 8837: Materials for Space Telescopes.
[2] There were also significant discussions of these telescopes and their application to Exo-planet research in Conference 8864, Session 8.

- Materials for space telescopes, presented in a Joint Session with Conference 8837 on materials technologies and applications. Specific topics included market potential, processing for mirrors, and radiation damage.
- The Conference concluded with an overview of the NASA Advanced Mirror and Technology Development (AMTD) program, which is developing several specific (and related) technologies that can be used as foundations for future UVOIR space telescope systems. The intent is to ensure that all critical technologies have achieved at least TRL 6 in time for the 2020 Decadal Survey.

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