PROCEEDINGS OF SPIE

AOPC 2023: Novel Technologies and Instruments for Astronomical Imaging and Spectroscopy

Yongtian Zhu Suijian Xue Quentin Parker Editors

25–27 July 2023 Beijing, China

Sponsored by Chinese Society for Optical Engineering (CSOE) (China)

Technical Cosponsor SPIE

Organized by
Laser Technology Committee, CSOE (China)
Infrared Technology Committee, CSOE (China)
THz Technology Committee, CSOE (China)
Imaging and Detection Technology Committee, CSOE (China)
Advanced Optical Manufacturing Youth Expert Committee, CSOE (China)

Published by SPIE

Volume 12965

Proceedings of SPIE 0277-786X, V. 12965

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.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings: Author(s), "Title of Paper," in AOPC 2023: Novel Technologies and Instruments for Astronomical Imaging and Spectroscopy, edited by Yongtian Zhu, Suijian Xue, Quentin Parker, Proc. of SPIE 12965, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510672369

ISBN: 9781510672376 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2023 Society of Photo-Optical Instrumentation Engineers (SPIE).

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

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



Paper Numbering: A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

Contents

v Conference Committee

NOVEL TECHNOLOGIES AND INSTRUMENTS FOR ASTRONOMICAL IMAGING AND SPECTROSCOPY

12965 02	Morphing behavior of a piezoelectric deformable mirror under complex environment for space active optics $[12965-14]$
12965 03	Image super-resolution reconstruction for EAST TiO band (7057Å) solar images [12965-1]
12965 04	The influence of the horizontal atmosphere on transmission efficiency of the laser eavesdropping [12965-2]
12965 05	IPMSM sensorless control technology based on high frequency square wave injection method [12965-3]
12965 06	Motor magnetic encoder system design in miniature fiber positioner [12965-4]
12965 07	Ultra-low power drive system design for fiber positioner robot [12965-5]
12965 08	The study on dynamics characteristics of focal plane assembly of survey module of CSST [12965-7]
12965 09	A composite piezoelectric deformable mirror with woofer-tweeter configuration [12965-10]
12965 OA	Design of a co-aperture composite imaging system for visible light remote sensing camera and synthetic aperture radar [12965-11]
12965 OB	Research on quantum efficiency calibration of SVOM VT CCDs [12965-12]
12965 OC	A new method of multi-target tracking in wide-area for dealing with the threat of small celestial bodies in space [12965-13]
12965 0D	Aperiodic multi-notch FBG filters for astronomical positronium detection [12965-16]