

PROCEEDINGS OF SPIE

First Advanced Imaging and Information Processing Conference (AIP 2023)

**Liangcai Cao
Xiaopeng Shao
Xinzhu Sang
Chao Zuo**
Editors

**26–28 July 2023
Jinggangshan, China**

Organized by
Chinese Laser Press (China)
China Optical Society Holographic and Optical Information Processing Committee (China)

Sponsored by
Jiangxi Optical Society (China)
Nanchang Hangkong University (China)
Jinggangshan University (China)
Northwestern Polytechnical University (China)
Nanjing University of Science and Technology (China)
Beijing University of Posts and Telecommunications (China)
Xidian University (China)
State Key Laboratory of Transient Optics and Photonics Technology (China)

Published by
SPIE

Volume 12942

Proceedings of SPIE 0277-786X, V. 12942

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

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 SPIDigitalLibrary.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 *First Advanced Imaging and Information Processing Conference (AIIIP 2023)*, edited by Liangcai Cao, Xiaopeng Shao, Xinzhu Sang, Chao Zuo, Proc. of SPIE 12942, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510671904
ISBN: 9781510671911 (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.

SPIE. DIGITAL LIBRARY
SPIDigitalLibrary.org

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*

FIRST ADVANCED IMAGING AND INFORMATION PROCESSING CONFERENCE

- 12942 02 **Improved fast Fourier solution based on transport of intensity equation** [12942-1]
- 12942 03 **Large depth range dithered binary focusing fringe projection technique** [12942-2]
- 12942 04 **Digital image correlation of brittle materials based on ultrashort pulse laser imaging** [12942-3]
- 12942 05 **Research on the Wirtinger Flow algorithm based on quadratic distribution initial value** [12942-4]
- 12942 06 **Study on the propagation characteristics of coherent synthetic vortex beams in atmospheric turbulence** [12942-6]
- 12942 07 **Research on precision visual inspection technology based on new energy battery manufacturing** [12942-7]
- 12942 08 **Research on visual deception recognition technology based on monocular polarization imaging** [12942-9]
- 12942 09 **A real-time generation method for light field 3D image source based on instancing camera rendering** [12942-12]
- 12942 0A **Enhancement of multimodal imaging of rabbit eyes using optical clearing agents** [12942-14]
- 12942 0B **A novel method for direct measurement of spark energy** [12942-17]
- 12942 0C **Hybrid compressed light field optimization algorithm based on stochastic gradient descent** [12942-18]
- 12942 0D **Depth layer slicing optimization method based on hybrid compressive light field** [12942-21]
- 12942 0E **A differential geometry-based method for detecting etching defects in high-density interconnect IC substrates** [12942-23]
- 12942 0F **Defocus-enhanced technique for real-world scenarios using generative models** [12942-24]
- 12942 0G **A two-stage neural network recovering phase from a single-frame phase-shifted hologram** [12942-25]
- 12942 0H **Customized optical bottle beams based on dual diffraction-free beams** [12942-26]