

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING

Vol. 20 No. 36

Adaptive Optics and Wavefront Control for Biological Systems V

Thomas G. Bifano
Sylvain Gigan
Na Ji
Editors

3–4 February 2019
San Francisco, California, United States

Sponsored and Published by
SPIE

Volume 10886

Proceedings of SPIE, 1605-7422, V. 10886

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 *Adaptive Optics and Wavefront Control for Biological Systems V*, edited by Thomas G. Bifano, Sylvain Gigan, Na Ji, Proceedings of SPIE Vol. 10886 (SPIE, Bellingham, WA, 2019) Seven-digit Article CID Number.

ISSN: 1605-7422
ISSN: 2410-9045 (electronic)

ISBN: 9781510624146
ISBN: 9781510624153 (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

Copyright © 2019, Society of Photo-Optical Instrumentation Engineers.

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 copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online 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. The CCC fee code is 1605-7422/19/\$18.00.

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: *Proceedings of SPIE* follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article 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	<i>Authors</i>
vii	<i>Conference Committee</i>

APPLICATIONS OF WAVEFRONT CONTROL IN LIVE BIOIMAGING

10886 03	Wavefront sensorless adaptive optics for optical coherence tomography guided femtosecond laser surgery in the posterior eye [10886-2]
----------	--

ADAPTIVE OPTICS

10886 07	Imaging neural activity in zebrafish larvae with adaptive optics and structured illumination light sheet microscopy [10886-6]
10886 09	Adaptive measurement and correction of polarization aberrations [10886-8]

WAVEFRONT SHAPING AND MEASUREMENT

10886 0D	Refractive opto-fluidic wavefront modulator with electrostatic push-pull actuation [10886-12]
----------	--

ENDOSCOPE CALIBRATION

10886 0J	Towards focusing broad band light through a multimode fiber endoscope [10886-18]
----------	---

MULTIMODE FIBER IMAGING

10886 0N	Deep learning assisted image transmission in multimode fibers (Invited Paper) [10886-22]
----------	---

IMAGING AND FOCUSING THROUGH SCATTER II

10886 0W	Light propagation in turbid media: an approach of interpolation in the optimal phase matrix [10886-31]
----------	---

COMPUTATIONAL ADAPTIVE IMAGING

- 10886 0Y **Registering large caustic distortions for high dynamic range diffuser wavefront sensing** [10886-33]
- 10886 10 **Multimode fiber transmission matrix obtained with internal references** [10886-35]

POSTER SESSION

- 10886 12 **Deep learning assisted optical wavefront shaping in disordered medium** [10886-37]
- 10886 13 **Improvement of scattering suppression effect of time-reversal propagation using digital phase-conjugate light** [10886-38]
- 10886 17 **Development of microscopic adaptive optics using image correlation** [10886-42]
- 10886 19 **Laser beam focusing through the dense multiple scattering suspension using bimorph mirror** [10886-44]
- 10886 1A **Optimization-based open-loop control of phase modulators for adaptive optics** [10886-45]
- 10886 1C **Utilizing optical conjugate plane to enhance 3D focusing and forming shapes behind turbid media** [10886-47]