Adaptive Optics and Wavefront Control for Biological Systems II

Thomas G. Bifano Joel Kubby Sylvain Gigan Editors

13–15 February 2016 San Francisco, California, United States

Sponsored and Published by SPIE

Volume 9717

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 Adaptive Optics and Wavefront Control for Biological Systems II, edited by Thomas G. Bifano, Joel Kubby, Sylvain Gigan, Proceedings of SPIE Vol. 9717 (SPIE, Bellingham, WA, 2016) Six-digit Article CID Number.

ISSN: 1605-7422

ISSN: 2410-9045 (electronic) ISBN: 9781628419511

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 © 2016, 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 1605-7422/16/\$18.00.

Printed in the United States of America Vm7 i ffUb 5 ggc WJUhY gž & Wži bXYf`]WY bgY Zfca 'GD-9.

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



SPIEDigitalLibrary.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 six-digit CID article numbering system structured as follows:

- The first four 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

vii	Authors
VII	Authors
ix	Conference Committee
xi	Introduction
	AO FOR MICROSCOPY AND OPTICAL COHERENCE TOMOGRAPHY I
9717 06	Adaptive optics in digital micromirror based confocal microscopy [9717-4]
9717 07	Wavelet-based denoising of the Fourier metric in real-time wavefront correction for single molecule localization microscopy [9717-5]
	AO FOR MICROSCOPY AND OPTICAL COHERENCE TOMOGRAPHY II
9717 0A	Wavefront sensorless approaches to adaptive optics for in vivo fluorescence imaging of mouse retina [9717-9]
9717 OB	Pulse front adaptive optics in multiphoton microscopy [9717-10]
	AO FOR MICROSCOPY AND OPTICAL COHERENCE TOMOGRAPHY IV
9717 0G	Dynamic performance of MEMS deformable mirrors for use in an active/adaptive two-photon microscope [9717-15]
	COHERENT OPTICAL ADAPTIVE TECHNIQUES
9717 OJ	Volumetric imaging of fast biological dynamics in deep tissue via wavefront engineering (Invited Paper) [9717-18]
9717 OK	Aberration correction for stimulated emission depletion microscopy with coherent optical adaptive technique [9717-19]
	FOCUSING LIGHT THROUGH SCATTERING TISSUES I
	TO COUNTY LIGHT TIME CONTINUE TO THE TOTAL THE TOTAL TO T
9717 OM	Optical wavefront shaping for the enhancement of Raman signal in scattering media [9717-21]
9717 ON	Enhanced second-harmonic-generation detection of collagen by means of optical wavefront shaping [9717-22]

9717 0Q	Accelerated wavefront determination technique for optical imaging through scattering medium [9717-25]
	FOCUSING LIGHT THROUGH SCATTERING TISSUES III
9717 OT	Biological elements carry out optical tasks in coherent imaging systems (Invited Paper) [9717-29]
9717 OV	Hybrid iterative wavefront shaping for high-speed focusing through scattering media [9717-31]
	FOCUSING LIGHT THROUGH SCATTERING TISSUES IV
9717 0X	High-speed channel demixing by scanning interferometric focusing with binary transmission matrix (Invited Paper) [9717-33]
9717 OZ	Adaptive wavefront shaping for flow-field measurements [9717-35]
9717 10	Spatial structure and density of states of transmission eigenchannels (Invited Paper) [9717-36]
	COMPUTED OPTICAL IMAGING TECHNIQUES
9717 15	Effects of aberrations in vortex-beams generated with amplitude diffraction gratings [9717-41]
9717 16	Computational adaptive optics for broadband interferometric tomography of tissues and cells (Invited Paper) [9717-42]
	SHAPED BEAMS FOR LIGHT SHEET AND STRUCTURED ILLUMINATION MICROSCOPY
9717 17	Dynamic focusing in the zebrafish beating heart (Invited Paper) [9717-43]
9717 18	Light-sheet optimization for microscopy [9717-44]
9717 19	Structured adaptive focusing through scattering media [9717-45]
	CHANNEL DE-MIXING FOR ENDOSCOPY/FIBERS
9717 1C	Confocal microscopy via multimode fibers: fluorescence bandwidth [9717-48]
9717 1E	Two-photon excitation endoscopy through a multimode optical fiber [9717-50]
9717 1F	Two-photon fluorescence imaging through multicore fiber with digital phase conjugation [9717-51]

	9717 1H	Fluorescence and optical-resolution photoacoustic imaging through capillary waveguides [9717-53]
_		WAVEFRONT SHAPING FOR PHOTOACOUSTIC AND ACOUSTO-OPTICAL IMAGING/TRUE
	9717 1L	Controlling the light distribution through turbid media with wavefront shaping based on volumetric optoacoustic feedback [9717-57]
_		POSTER SESSION
	9717 1N	Transmissive liquid-crystal device correcting primary coma aberration and astigmatism in laser scanning microscopy [9717-59]
	9717 1P	Analysis of design for Hartmann-Shack measurements under usage of Fourier-iteration and Zernike approximation wavefront reconstruction methods [9717-61]