PROCEEDINGS OF SPIE

[SPIDigitalLibrary.org/conference-proceedings-of-spie](https://spiedigitallibrary.org/conference-proceedings-of-spie)

Front Matter: Volume 7924

, "Front Matter: Volume 7924," Proc. SPIE 7924, Atmospheric and Oceanic
Propagation of Electromagnetic Waves V, 792401 (28 March 2011); doi:
10.1117/12.891446

Event: SPIE LASE, 2011, San Francisco, California, United States

PROCEEDINGS OF SPIE

Atmospheric and Oceanic Propagation of Electromagnetic Waves V

Olga Korotkova
Editor

25 January 2011
San Francisco, California, United States

Sponsored and Published by
SPIE

Volume 7924

Proceedings of SPIE, 0277-786X, v. 7924

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

The papers included 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. The papers published in these proceedings 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 this book:

Author(s), "Title of Paper," in *Atmospheric and Oceanic Propagation of Electromagnetic Waves V*, edited by Olga Korotkova, Proceedings of SPIE Vol. 7924 (SPIE, Bellingham, WA, 2011) Article CID Number.

ISSN 0277-786X

ISBN 9780819484611

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 © 2011, 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 0277-786X/11/\$18.00.

Printed in the United States of America.

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

SPIDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first 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, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- 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. The complete citation is used on the first page, and an abbreviated version on subsequent pages. Numbers in the index correspond to the last two digits of the six-digit CID number.

Contents

- v Conference Committee
- vii *Microfabrication by optical tweezers (Plenary Paper) (7921-102)*
R. Ghadiri, T. Weigel, C. Esen, A. Ostendorf, Ruhr-Univ. Bochum (Germany)

SESSION 1 WAVE PROPAGATION IN RANDOM MEDIA: THEORETICAL STUDIES

- 7924 02 **Generation of various partially coherent beams and their propagation properties in turbulent atmosphere: a review (Invited Paper) [7924-01]**
Y. Cai, Soochow Univ. (China)
- 7924 03 **Scintillation of Airy beam arrays in atmospheric turbulence [7924-02]**
G. Gbur, Y. Gu, The Univ. of North Carolina at Charlotte (United States)
- 7924 04 **Scintillation properties of pseudo-Bessel correlated beams in atmospheric turbulence [7924-03]**
Y. Gu, G. Gbur, The Univ. of North Carolina at Charlotte (United States)
- 7924 06 **Method of evaluation of the mutual coherence function of laser beams and its application for symmetric dark hollow beams [7924-05]**
V. A. Banakh, D. A. Marakasov, D. S. Rytchkov, V.E. Zuev Institute of Atmospheric Optics (Russian Federation); Y. K. Baykal, H. T. Eyyuboğlu, Çankaya Univ. (Turkey)

SESSION 2 WAVE PROPAGATION IN RANDOM MEDIA: EXPERIMENTAL STUDIES

- 7924 09 **Probability density function of fluctuating intensity of a laser beam propagating in marine atmospheric turbulence [7924-08]**
S. Avramov-Zamurovic, U.S. Naval Academy (United States); O. Korotkova, Univ. of Miami (United States); R. Malek-Madani, U.S. Naval Academy (United States)
- 7924 0A **Picosecond laser pulse propagation delay fluctuation through atmosphere [7924-09]**
J. Blazej, I. Prochazka, L. Kral, Czech Technical Univ. in Prague (Czech Republic)
- 7924 0B **Study of optical phase change measurement using the Hilbert Transform and interferometric techniques [7924-10]**
J. A. Duperre III, C. O. Font, G. C. Gilbreath, D. Bonanno, E. Tarpara, A. Golden, U.S. Naval Research Lab. (United States)

SESSION 3 MITIGATION OF RANDOM MEDIA (ATMOSPHERE AND OCEAN) AND APPLICATIONS

- 7924 0D **Optical wireless communication through random media (Invited Paper) [7924-12]**
S. Arnon, Ben-Gurion Univ. of the Negev (Israel)

- 7924 OF **Wavefront sensing and adaptive control in phased array of fiber collimators** [7924-14]
S. L. Lachinova, Univ. of Maryland, College Park (United States) and Optonicus (United States); M. A. Vorontsov, Univ. of Dayton (United States)
- 7924 OG **Scintillation reduction for combined Gaussian-vortex beam propagating through turbulent atmosphere** [7924-15]
G. P. Berman, Los Alamos National Lab. (United States); V. N. Gorshkov, Los Alamos National Lab. (United States), National Technical Univ. of Ukraine (Ukraine), and Institute of Physics (Ukraine); S. V. Torous, National Technical Univ. of Ukraine (Ukraine)
- 7924 OH **On fading probability density functions of fast-tracked and untracked free-space optical communication channels** [7924-16]
Z. Zhao, R. Liao, Michigan Technological Univ. (United States)
- 7924 OI **RF-modulated pulsed fiber optic lidar transmitter for improved underwater imaging and communications** [7924-17]
F. Kimpel, Y. Chen, J.-L. Fouron, M. Akbulut, D. Engin, S. Gupta, Fibertek, Inc. (United States)

SESSION 4 MODELING AND MEASUREMENTS OF ATMOSPHERIC TURBULENCE

- 7924 OK **A tunable diode laser absorption system for long path atmospheric transmission and high energy laser applications** [7924-19]
C. A. Rice, G. Perram, Air Force Institute of Technology (United States)
- 7924 OL **Atmospheric absorption spectroscopy using Tm: fiber sources around two microns** [7924-20]
P. Kadwani, CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States); J. Chia, College of Optical Sciences, The Univ. of Arizona (United States); F. Altal, Masdar Institute of Science & Technology (United Arab Emirates); R. A. Sims, C. Willis, L. Shah, CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States); D. Killinger, Univ. of South Florida (United States); M. C. Richardson, CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States)
- 7924 ON **Hybrid technique for propagation and scattering from random medium containing random distribution of particles** [7924-22]
Z. Tong, O. Korotkova, Univ. of Miami (United States)

Author Index

Conference Committee

Symposium Chairs

Friedhelm Dorsch, TRUMPF GmbH & Company KG (Germany)
Alberto Piqué, U.S. Naval Research Laboratory (United States)

Symposium Cochairs

Donald J. Harter, IMRA America, Inc. (United States)
Peter R. Herman, University of Toronto (Canada)

Conference Chair

Olga Korotkova, University of Miami (United States)

Program Committee

Larry C. Andrews, University of Central Florida (United States)
Yahya K. Baykal, Çankaya University (Turkey)
Yangjian Cai, Soochow University (China)
Frank D. Eaton, Air Force Research Laboratory (United States)
Gregory Gbur, The University of North Carolina at Charlotte (United States)
G. Charmaine C. Gilbreath, U.S. Naval Research Laboratory (United States)
Merrick C. Haller, Oregon State University (United States)
Vladimir P. Lukin, V.E. Zuev Institute of Atmospheric Optics (Russian Federation)
Alex S. Mahalov, Arizona State University (United States)
Ronald L. Phillips, Florida Space Institute (United States)
Jixiong Pu, Huaqiao University (China)
Robert K. Tyson, The University of North Carolina at Charlotte (United States)
Daomu Zhao, Zhejiang University (China)