

PROCEEDINGS OF SPIE

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

Front Matter: Volume 8071

, "Front Matter: Volume 8071," Proc. SPIE 8071, Nonlinear Optics and Applications V, 807101 (7 June 2011); doi: 10.1117/12.901402

SPIE.

Event: SPIE Optics + Optoelectronics, 2011, Prague, Czech Republic

PROCEEDINGS OF SPIE

Nonlinear Optics and Applications V

Mario Bertolotti
Editor

19–21 April 2011
Prague, Czech Republic

Sponsored and Published by
SPIE

Cooperating Organisations
ELI Beamlines
HiPER

Volume 8071

Proceedings of SPIE, 0277-786X, v. 8071

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 *Nonlinear Optics and Applications V*, edited by Mario Bertolotti, Proceedings of SPIE Vol. 8071 (SPIE, Bellingham, WA, 2011) Article CID Number.

ISSN 0277-786X
ISBN 9780819486615

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.

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

vii	<i>Conference Committee</i>
ix	<i>Introduction</i>

NANOPHOTONICS I

- 8071 03 **Electro-optical effects in 2D macroporous silicon structures with nanocoatings** [8071-02]
L. Karachevtseva, Y. Goltviansky, O. Lytvynenko, K. Parshyn, F. Sizov, O. Stronska,
V. Lashkaryov Institute of Semiconductor Physics (Ukraine)
- 8071 04 **Resonance measurements techniques of optical whispering gallery mode mini-disc resonators for microwave photonics applications** [8071-03]
P. Salzenstein, FEMTO-ST, CNRS (France); M. Jelínek, Czech Technical Univ. in Prague (Czech Republic); Y. K. Chembo, FEMTO-ST, CNRS (France); M. Pogurmiskiy, National Research Univ. of Information Technology Mechanics and Optics (Russian Federation); H. Tavernier, K. Volyanskiy, K. Phan Huy, M. Chauvet, L. Larger, FEMTO-ST, CNRS (France); V. Kubeček, Czech Technical Univ. in Prague (Czech Republic)

NANOPHOTONICS II

- 8071 05 **Intense ultra-broadband down-conversion from randomly poled nonlinear crystals** [8071-04]
J. Svozilík, Palacky Univ. (Czech Republic); J. Peřina, Jr., Institute of Physics (Czech Republic)
- 8071 06 **Up- and down-conversion at three-wave interaction in medium with combined nonlinear response** [8071-05]
V. A. Trofimov, V. V. Trofimov, N. V. Levitskiy, Lomonosov Moscow State Univ. (Russian Federation)
- 8071 07 **Cross phase modulation in photonic crystals** [8071-06]
K. Słowik, A. Raczyński, J. Zaremba, Nicolaus Copernicus Univ. (Poland); S. Zielińska-Kaniasty, Univ. of Technology and Life Sciences (Poland); M. Artoni, CNR-INFM, Brescia Univ. (Italy); G. C. La Rocca, Scuola Normale Superiore di Pisa (Italy) and CNISM (Italy)
- 8071 08 **Two telescopes ABCD electro-optic beam combiner based on lithium niobate for near infrared stellar interferometry** [8071-07]
S. Heidmann, O. Caballero, A. Nolot, M. Gineys, T. Moulin, A. Delboubé, L. Jocou, J.-B. Le Bouquin, J.-P. Berger, G. Martin, Institut de Planétologie et d'Astrophysique de Grenoble, CNRS, Univ. Joseph Fourier (France)
- 8071 09 **Strong modification of density of optical states in biotemplated photonic crystals** [8071-08]
M. R. Jorgensen, B. Yonkee, M. H. Bartl, Univ. of Utah (United States)

ULTRAFAST PHENOMENA I

- 8071 OG **Attosecond pulse generation, measurement, and applications on solids (Invited Paper)** [8071-15]
R. Kienberger, Technische Univ. München (Germany) and Max-Planck-Institut für Quantenoptik (Germany)
- 8071 OH **Isolated attosecond pulses: generation and application to molecular science (Invited Paper)** [8071-16]
M. Lucchini, F. Calegari, Politecnico di Milano, IFN-CNR (Italy); K. S. Kim, Politecnico di Milano, IFN-CNR (Italy) and KAIST (Korea, Republic of); C. Vozzi, S. Stagira, G. Sansone, M. Nisoli, Politecnico di Milano, IFN-CNR (Italy)
- 8071 OI **Optimization and characterization of a femtosecond tunable light source based on the soliton self-frequency shift in photonic crystal fiber** [8071-17]
C. H. Hage, B. Kibler, Lab. Interdisciplinaire Carnot de Bourgogne, CNRS (France); E. R. Andresen, S. Michel, H. Rigneault, Institut Fresnel, CNRS (France); A. Courjaud, E. Mottay, Amplitude Systèmes (France); J. M. Dudley, FEMTO-ST, CNRS (France); G. Millot, C. Finot, Lab. Interdisciplinaire Carnot de Bourgogne, CNRS (France)

ULTRAFAST PHENOMENA II

- 8071 OK **Deep UV generation and fs pulses characterization using strontium tetraborate** [8071-19]
A. S. Aleksandrovsky, A. M. Vyunishev, A. I. Zaitsev, Kirensky Institute of Physics (Russian Federation) and Siberian Federal Univ. (Russian Federation); A. A. Ikonnikov, G. I. Pospelov, V. V. Slabko, A. A. Zhokhova, Siberian Federal Univ. (Russian Federation)
- 8071 OL **Control of the group velocity of a light pulse propagating through a four-level atomic system** [8071-20]
P. Grochowska, A. Raczyński, J. Zaremba, Nicolaus Copernicus Univ. (Poland); S. Zielińska-Kaniasty, Univ. of Technology and Life Sciences (Poland)
- 8071 ON **Frequency doubling of picosecond pulses generated by a monolithic DFB tapered MOPA in a ppMgO:LN channel waveguide** [8071-22]
D. Jedrzejczyk, Ferdinand-Braun-Institut (Germany); S. Riecke, PicoQuant GmbH (Germany); R. Güther, Ferdinand-Braun-Institut (Germany); K. Lauritsen, PicoQuant GmbH (Germany); K. Paschke, Ferdinand-Braun-Institut (Germany)

SOLITONS

- 8071 OQ **Scale-free optical propagation in out-of-equilibrium ferroelectric crystals (Invited Paper)** [8071-25]
E. DelRe, Univ. of L'Aquila (Italy) and IPCF-CNR, Univ. degli Studi di Rome Sapienza (Italy); A. J. Agranat, Hebrew Univ. of Jerusalem (Israel); C. Conti, Univ. degli Studi di Rome Sapienza (Italy)
- 8071 OR **Photorefractivity of zirconium-doped lithium niobate (Invited Paper)** [8071-26]
V. Degiorgio, P. Minzioni, G. Nava, I. Cristiani, Univ. degli Studi di Pavia (Italy); W. Yan, Univ. degli Studi di Pavia (Italy) and Hebei Univ. of Technology (China); D. Grando, N. Argiolas, M. Bazzan, M. V. Ciampolillo, A. M. Zaltron, C. Sada, Univ. degli Studi di Pavia (Italy)

NONLINEAR EFFECTS I

- 8071 OT **Second-harmonic generation and electro-optic modulation in thermally poled and unpoled twin-hole silica-glass optical fiber** [8071-28]
T. Mizunami, K. Okazaki, H. Sato, R. Kawamoto, Kyushu Institute of Technology (Japan)
- 8071 OU **Biphoton compression in standard optical fiber** [8071-29]
G. Brida, Istituto Nazionale di Ricerca Metrologica (Italy); M. Checkhova, Istituto Nazionale di Ricerca Metrologica (Italy) and Lomonosov Moscow State Univ. (Russian Federation); I. P. Degiovanni, M. Genovese, Istituto Nazionale di Ricerca Metrologica (Italy); G. Kitaeva, Lomonosov Moscow State Univ. (Russian Federation); A. Meda, Istituto Nazionale di Ricerca Metrologica (Italy)

NONLINEAR EFFECTS II

- 8071 OX **Finite element modelling of induced gratings in nonlinear optics** [8071-33]
P. Godard, F. Zolla, A. Nicolet, Institut Fresnel, CNRS, Aix-Marseille Univ. (France)
- 8071 OZ **PhoXonic architectures for tailoring the acousto-optic interaction** [8071-35]
N. Papanikolaou, I. E. Psarobas, G. Gantzounis, E. Almpanis, Institute of Microelectronics, NCSR Demokritos (Greece); N. Stefanou, Univ. of Athens (Greece); B. Djafari-Rouhani, IEMN, Univ. de Lille 1 (France); B. Bonello, Institut des NanoSciences de Paris, CNRS, Univ. Pierre et Marie Curie (France); V. Laude, FEMTO-ST, CNRS, Univ. de Franche-Comté (France); A. Martinez, Univ. Politécnic de Valencia (Spain)

POSTER SESSION

- 8071 11 **Optoelectronic phase noise system designed for microwaves photonics sources measurements in metrology application** [8071-37]
P. Salzenstein, N. Cholley, FEMTO-ST, CNRS (France) and LNE-LTFB (France); M. Zarubin, E. Pavlyuchenko, A. Hmima, Y. K. Chembo, L. Larger, FEMTO-ST, CNRS (France)
- 8071 12 **Three-dimensional numerical simulations in attosecond physics regime using the CUDA technology: the stabilization phenomenon** [8071-38]
T. Dziubak, J. Matulewski, Nicolaus Copernicus Univ. (Poland)
- 8071 15 **Multi-threaded parallel simulation of non-local non-linear problems in ultrashort laser pulse propagation in the presence of plasma** [8071-41]
M. Baregheh, V. Mezentsev, Aston Univ. (United Kingdom); H. Schmitz, Imperial College London (United Kingdom)
- 8071 16 **Stability analysis of second order pulsed Raman laser in dispersion managed systems** [8071-42]
S. K. Kalyoncu, S. Gao, E.-K. Tien, Y. Huang, D. Yildirim, E. Adas, Univ. of California, Irvine (United States); S. Wabnitz, Univ. degli Studi di Brescia (Italy); O. Boyraz, Univ. of California, Irvine (United States) and Istanbul Sehir Univ. (Turkey)

8071 19 **Observation of slow light propagation in saturable erbium doped fiber via transient fluorescence at the fiber side** [8071-46]

A. Shlyagina, Univ. Autónoma de Baja California (Mexico); M. Plata Sanchez, S. Stepanov, Ctr. de Investigación Científica y de Educación Superior de Ensenada (Mexico)

Author Index

Conference Committee

Symposium Chairs

Miroslav Hrabovský, Palacký University Olomouc (Czech Republic)
Wolfgang Sandner, Max-Born-Institut für Nichtlineare Optik und
Kurzeitspektroskopie (Germany) and Laserlab Europe
Bahaa Saleh, CREOL, The College of Optics and Photonics, University of
Central Florida (United States)
Jan Řídký, Institute of Physics of the ASCR, v.v.i. (Czech Republic)

Symposium Honorary Chair

Jan Peřina, Sr., Palacký University Olomouc (Czech Republic)

Conference Chair

Mario Bertolotti, Università degli Studi di Roma La Sapienza (Italy)

Conference Cochairs

Joseph W. Haus, University of Dayton (United States)
Alexei M. Zheltikov, Lomonosov Moscow State University (Russian
Federation)

Program Committee

Kiyoshi Asakawa, National Institute for Materials Science (Japan)
Bruno Crosignani, Università dell'Aquila (Italy)
Reinhard Kienberger, Max-Planck-Institut für Quantenoptik (Germany)
Yuri S. Kivshar, The Australian National University (Australia)
Geoffrey H. C. New, Imperial College London (United Kingdom)
Jan Peřina, Sr., Palacký University Olomouc (Czech Republic)
Fabrice Raineri, Centre National de la Recherche Scientifique (France)
Mark I. Stockman, Georgia State University (United States)

Session Chairs

- 1 Nanophotonics I
Mario Bertolotti, Università degli Studi di Roma La Sapienza (Italy)
- 2 Nanophotonics II
Mario Bertolotti, Università degli Studi di Roma La Sapienza (Italy)

- 3 Nonlinear Plasmonics I
Anatoly V. Zayats, King's College London (United Kingdom)
- 4 Nonlinear Plasmonics II
Mark I. Stockman, Georgia State University (United States)
- 5 Ultrafast Phenomena I
Mario Bertolotti, Università degli Studi di Roma La Sapienza (Italy)
- 6 Ultrafast Phenomena II
Reinhard Kienberger, Max-Planck-Institut für Quantenoptik (Germany)
- 7 Solitons I
Eugenio Del Re, Università degli Studi dell'Aquila (Italy)
- 8 Solitons II
Mario Bertolotti, Università degli Studi di Roma La Sapienza (Italy)
- 9 Nonlinear Effects I
Joseph W. Haus, University of Dayton (United States)
- 10 Nonlinear Effects II
Joseph W. Haus, University of Dayton (United States)

Introduction

This volume contains the texts of many papers that were presented at the SPIE Conference on Nonlinear Optics and Applications on April 19–21, 2011 in Prague. The topics covered many of the more advanced topics in the nonlinear optics research. This year these topics were: nanophotonics, nonlinear plasmonics, ultrafast phenomena, solitons, and nonlinear effects in general. Some of the invited papers in these topics are presented here, and allow to see the advances that have been made in the argument. Nanophotonics, plasmonics, ultrafast phenomena and solitons are all hot topics in which new results are frequent, and some examples of them are in the papers presented here.

Mario Bertolotti

