PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 11037

, "Front Matter: Volume 11037," Proc. SPIE 11037, Laser Acceleration of
Electrons, Protons, and Ions V, 1103701 (26 July 2019); doi:
10.1117/12.2535696

Event: SPIE Optics + Optoelectronics, 2019, Prague, Czech Republic

PROCEEDINGS OF SPIE

Laser Acceleration of Electrons, Protons, and Ions V

Eric Esarey
Carl B. Schroeder
Jörg Schreiber
Editors

1–3 April 2019
Prague, Czech Republic

Sponsored and Published by
SPIE

Volume 11037

Proceedings of SPIE 0277-786X, V. 11037

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

Laser Acceleration of Electrons, Protons, and Ions V, edited by Eric Esarey, Carl B. Schroeder, Jörg Schreiber,
Proc. of SPIE Vol. 11037, 1103701 · © 2019 SPIE · CCC code: 0277-786X/19/\$18 · doi: 10.1117/12.2535696

Proc. of SPIE Vol. 11037 1103701-1

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 *Laser Acceleration of Electrons, Protons, and Ions V*, edited by Eric Esarey, Carl B. Schroeder, Jörg Schreiber, Proceedings of SPIE Vol. 11037 (SPIE, Bellingham, WA, 2019) Seven-digit Article CID Number.

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

ISBN: 9781510627406
ISBN: 9781510627413 (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 0277-786X/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>

ION ACCELERATION I

11037 03	The laser-driven ion acceleration beamline on the ALLS 200 TW for testing nanowire targets [11037-2]
----------	---

ION ACCELERATION II

11037 08	Comparison of ion acceleration from nonexpanded and expanded thin foils irradiated by ultrashort petawatt laser pulse [11037-7]
11037 0B	Laser driven ion acceleration in high-density gas jets [11037-10]

LASER-SOLID INTERACTIONS

11037 0G	Electrons acceleration in plasma channel in the relativistic laser-plasma of solid targets [11037-15]
11037 0H	Study of electron acceleration and near threshold nuclear reactions in the relativistic laser-plasma of solid targets [11037-16]

LASER-PLASMA ACCELERATION OF ELECTRONS

11037 0M	Development of a laser-wakefield Thomson x-ray source for x-ray fluorescence imaging [11037-21]
----------	--

RADIATION GENERATION

11037 0N	Tunable X-ray source by Thomson scattering during laser-wakefield acceleration (Invited Paper) [11037-22]
----------	--

LASER WAKEFIELD ACCELERATORS

11037 OT **Wakefield excited by ultrashort laser pulses in near-critical density plasmas** [11037-29]

POSTER SESSION

11037 OZ **Generation of collimated quasi-mono-energetic ion beams using a double layer target with interface modulations** [11037-35]

11037 10 **Betatron radiation enhancement by a density up-ramp in the bubble regime of LWFA**
[11037-36]

11037 11 **Design of a double dipole electron spectrometer** [11037-37]

11037 12 **Cat's cradle: a compact, 3D mounted, 90-ns optical delay-line for laser-electron acceleration**
[11037-38]

Authors

Numbers in the index correspond to the last two digits of the seven-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first five digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Antici, Patrizio, 03	Salvadori, Martina, 03
Battaglia, Giorgio, 11	Santos, J., 0B
Bienvenue, Charles, 03	Savel'ev, Andrei, 0G, 0H
Blumendorf, F., 0M	Schindler, Sabine, 0N
Bohlen, S., 0M	Schmutzler, O., 0M
Brümmer, T., 0M	Shahzad, Mohammed, 11
Brunetti, Enrico, 11	Shohat, Dor, 12
Bulanov, Sergei V., 0T, 0Z	Spesvytsev, Roman, 11
Ceccotti, T., 0B	Staufer, T., 0M
Cohen, Itamar, 12	Tarisien, M., 0B
Danielova, M., 0Z	Tsymbalov, Ivan, 0G, 0H
de Loos, Marieke, 11	Urisman, Elior, 12
d'Humières, Emmanuel, 03, 0B	Valenta, Petr, 0T
Ding, Hao, 0N	Vallières, Simon, 03
Domange, J., 0B	van der Geer, Bas, 11
Döpp, Andreas, 0N	Vieux, Gregory, 11
Ehret, M., 0B	Wiggins, S. Mark, 11
Esirkepov, Timur Zh., 0T	Zakova, M., 08
Gilljohann, Max, 0N	Zavorotniy, Akim, 0H
Gorlova, Diana, 0G, 0H	
Götzfried, Johannes, 0N	
Grittani, Gabriele M., 0T	
Grüner, F., 0M	
Hannachi, F., 0B	
Henares, J-L., 0B	
Horný, Vojtěch, 08, 10	
Jaroszynski, Dino A., 11	
Karsch, Stefan, 0N	
Klimo, Ondrej, 0T	
Korn, Georg, 0T, 0Z	
Krůs, Miroslav, 10	
Lancia, L., 0B	
Levanon, Assaf, 12	
Li, Wentao, 11	
Maitrallain, Antoine, 11	
Manahan, Grace, 11	
Marquès, J-R., 0B	
Mašlárová, Dominika, 10	
Matys, M., 08, 0Z	
Meisel, M., 0M	
Nedorezov, Vladimir, 0H	
Nishihara, K., 0Z	
Osterhoff, J., 0M	
Payeur, Stéphane, 03	
Poder, K., 0M	
Pomerantz, Ishay, 12	
Pšikal, Jan, 08, 0Z, 10	
Puyuelo-Valdes, Pilar, 03, 0B	
Roitman, Dolev, 12	

Conference Committee

Symposium Chairs

Bedřich Rus, ELI Beamlines, Institute of Physics of the CAS, v.v.i.
(Czech Republic)
Chris Edwards, STFC Rutherford Appleton Laboratory
(United Kingdom)
Saša Bajt, Deutsches Elektronen-Synchrotron (Germany)
Ivo Rendina, Istituto per la Microelettronica e Microsistemi (Italy)
Mike Dunne, SLAC National Accelerator Laboratory (United States)

Honorary Symposium Chair

Erich Spitz, French Academy of Sciences, National Academy of
Technologies (France), Advisor to Thales (France)

Conference Chairs

Eric Esarey, Lawrence Berkeley National Laboratory (United States)
Carl B. Schroeder, Lawrence Berkeley National Laboratory
(United States)
Jörg Schreiber, Ludwig-Maximilians-Universität München (Germany)

Conference Programme Committee

Sergei V. Bulanov, ELI Beamlines (Czech Republic)
Min Chen, Shanghai Jiao Tong University (China)
Thomas E. Cowan, Helmholtz-Zentrum Dresden-Rossendorf e. V.
(Germany)
Brigitte Cros, Université Paris-Sud 11 (France)
Leonida A. Gizzi, Consiglio Nazionale delle Ricerche (Italy)
Björn Manuel Hegelich, Los Alamos National Laboratory
(United States)
Karl M. Krushelnick, University of Michigan (United States)
Wim Leemans, Lawrence Berkeley National Laboratory
(United States)
Victor Malka, Ecole Nationale Supérieure de Techniques Avancées
(France)
Zulfikar Najmudin, Imperial College London (United Kingdom)
Zheng-Ming Sheng, Shanghai Jiao Tong University (China)
Luis O. Silva, Universidade Técnica de Lisboa (Portugal)
Vladimir T. Tikhonchuk, Université de Bordeaux 1 (France)
Antonio C. Ting, U.S. Naval Research Laboratory (United States)
Matthew Zepf, Queen's University Belfast (United Kingdom)

Session Chairs

- 1 Ion Acceleration I
Jörg Schreiber, Ludwig-Maximilians-Universität München (Germany)
- 2 Ion Acceleration II
Daniele Margarone, ELI Beamlines (Czech Republic)
- 3 Laser-solid Interactions
Markus Roth, Technische Universität Darmstadt (Germany)
- 4 Laser-plasma Acceleration of Electrons
Carl B. Schroeder, Lawrence Berkeley National Laboratory
(United States)
- 5 Radiation Generation
Simon M. Hooker, University of Oxford (United Kingdom)
- 6 Laser Wakefield Accelerators
Eric H. Esarey, Lawrence Berkeley National Laboratory (United States)