Laser Acceleration of Electrons, Protons, and Ions VIII

Stepan S. Bulanov Gabriele M. Grittani Charlotte A. Palmer Editors

7–9 April 2025 Prague, Czech Republic

Sponsored by SPIE

Cosponsored by ELI Beamlines, ELI-ERIC (Czech Republic) Inprentus, Inc. (United States) CeramOptec® (Latvia)

Cooperating Organisations HiLASE (Czech Republic) AWE (United Kingdom) Czech and Slovak Optical Society (Czech Republic)

Published by SPIE

Volume 13534

Proceedings of SPIE 0277-786X, V. 13534

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 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 Laser Acceleration of Electrons, Protons, and Ions VIII, edited by Stepan S. Bulanov, Gabriele M. Grittani, Charlotte A. Palmer, Proc. of SPIE 13534, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510688643 ISBN: 9781510688650 (electronic)

Published by **SPIE** P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time) SPIE.org Copyright © 2025 Society of Photo-Optical Instrumentation Engineers (SPIE).

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 fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center 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.

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.



Paper Numbering: A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE 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 Conference Committee

ELECTRON ACCELERATION I

- 13534 02 Computational study of the density down-ramp injection mechanism in magnetized plasmas for the laser wakefield acceleration [13534-4]
- 13534 03 Effects of nanoparticle parameters on electron injection in NA-LWFA [13534-5]

ELECTRON ACCELERATION II

- 13534 04 A geometrical approach to modelling laser wakefield accelerators [13534-7]
- 13534 05 Electron acceleration in a wakefield generated by structured light (Best Student Paper Award) [13534-10]

ELECTRON ACCELERATION III

- 13534 06 Optimized scaling for reaching maximum electron energy from laser wakefield accelerator (Invited Paper) [13534-12]
- 13534 07 Laser wakefield electron acceleration simulation using physics-informed diffusion probabilistic models [13534-14]

APPLICATIONS I

13534.08 On the theory of relativistic mirrors formed by laser-driven nonlinear plasma waves [13534-19]