

PROCEEDINGS OF SPIE

***Roland V. Shack Memorial Session:
A Celebration of One of the
Great Teachers of Optical
Aberration Theory***

John P. Lehan
Editor

24 August – 4 September 2020
Online Only, United States

Sponsored and Published by
SPIE

Volume 11479

Proceedings of SPIE 0277-786X, V. 11479

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 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 *Roland V. Shack Memorial Session: A Celebration of One of the Great Teachers of Optical Aberration Theory*, edited by John P. Lehan, Proceedings of SPIE Vol. 11479 (SPIE, Bellingham, WA, 2020) Seven-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510637641

ISBN: 9781510637658 (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 © 2020, 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 \$21.00 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/20/\$21.00.

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

ROLAND SHACK'S LEGACY

- 11479 03 **Dispersion of electromagnetic waves in linear, homogeneous, and isotropic media** [11479-1]
- 11479 07 **Amazing scatterplate interferometer** [11479-5]
- 11479 08 **The impact of Roland Shack's wavefront sensor on the development of modern active optics (Invited Paper)** [11479-6]
- 11479 09 **The impact of the ocular Shack Hartmann sensor on improving visual performance** [11479-7]
- 11479 0A **A retrospective of Roland Shack's "Global View of Diffraction" (Invited Paper)** [11479-8]

ROLAND SHACK'S LEGACY: ABERRATION THEORY AND APPLICATIONS

- 11479 0D **Pupil aberrations in the LISA transceiver design** [11479-11]
- 11479 0E **Some surprising results from the analytical design of high-NA aplanatic singlet lenses with only one aspheric surface** [11479-12]
- 11479 0F **Enhancements and applications of induced aberration theory** [11479-13]
- 11479 0G **Roland V. Shack's discovery of nodal aberration theory, the expansion into the aberrations of freeform optics, and impact in optical design (Invited Paper)** [11479-14]
- 11479 0J **When aberrations carry useful information** [11479-17]