

PROCEEDINGS OF SPIE

Passive and Active Millimeter-Wave Imaging XXII

David A. Wikner
Duncan A. Robertson
Editors

18–19 April 2019
Baltimore, Maryland, United States

Sponsored and Published by
SPIE

Volume 10994

Proceedings of SPIE 0277-786X, V. 10994

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 *Passive and Active Millimeter-Wave Imaging XXII*, edited by David A. Wikner, Duncan A. Robertson, Proceedings of SPIE Vol. 10994 (SPIE, Bellingham, WA, 2019) Seven-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510626539

ISBN: 9781510626546 (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

SPIEDigitalLibrary.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>

MILLIMETRE WAVE RADAR: JOINT SESSION WITH CONFERENCES 10994 AND 11003

10994 02	Compressed sensing millimeter-wave compact radar range data acquisition and imaging [10994-1]
10994 03	3D radar imaging of mm-wave compact range data using compressed sensing [10994-2]
10994 04	Millimeter wave imaging for fixed wing zero visibility landing [10994-3]
10994 05	Coded aperture subreflector array for high resolution radar imaging [10994-18]

SYSTEMS

10994 06	Beam resolution analysis of a 340 GHz radar using acoustic levitation [10994-4]
10994 07	Handheld millimeter-wave radar and lidar systems using an IMU device [10994-5]
10994 08	Through-wall k-band and v-band synthetic aperture radar imaging of building structures and utility infrastructure [10994-6]
10994 09	A review of sensor technology development at NASA's Goddard Space Flight Center for earth science [10994-7]

SECURITY SCANNING

10994 0A	SAR millimeter wave imaging systems [10994-8]
10994 0D	High-resolution 3D microwave imaging of a moving target using optical motion capture [10994-11]

PHENOMENOLOGY

- 10994 0E **Radar backscattering measurements of a simplified rough ocean surface** [10994-12]
- 10994 0F **Bistatic terahertz scattering from random rough surfaces** [10994-13]
- 10994 0G **Suitability of explosive simulants for millimeter-wave imaging detection systems** [10994-14]
- 10994 0H **Exploring material characteristics by polarimetric MMW radiometry** [10994-15]

POSTER SESSION

- 10994 0I **Millimeter-wave forward-looking 3-D SAR imaging challenges** [10994-16]
- 10994 0J **Autofocus algorithms for millimeter-wave 3-D FLoSAR** [10994-17]