

PROCEEDINGS OF SPIE

Passive and Active Millimeter-Wave Imaging XXV

David A. Wikner
Duncan A. Robertson
Editors

3–7 April 2022
Orlando, Florida, United States

6–12 June, 2022
ONLINE

Sponsored by
SPIE

Cosponsored by
Deutsches Zentrum für Luft- und Raumfahrt (Germany)

Published by
SPIE

Volume 12111

Proceedings of SPIE 0277-786X, V. 12111

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 *Passive and Active Millimeter-Wave Imaging XXV*, edited by David A. Wikner, Duncan A. Robertson, Proc. of SPIE 12111, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510650985

ISBN: 9781510650992 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2022 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.

**SPIE. DIGITAL
LIBRARY**

SPIDigitalLibrary.org

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*

MILLIMETER WAVE RADAR: JOINT SESSION WITH CONFERENCES 12108 AND 12111

- 12111 02 **Modeling broadband phase noise from extended targets in a 170 GHz cloud-imaging radar** [12111-1]
- 12111 03 **Progress on the R4AsH triple frequency radar laboratory experiments for characterization of volcanic ash** [12111-2]
- 12111 04 **A high-resolution W band altimeter developed in ARRALIS** [12111-3]

IMAGING SYSTEMS

- 12111 06 **Millimeter-wave multistatic imaging system using software-defined radios for advanced multiplexing** [12111-5]
- 12111 07 **Freehand millimeter-wave imaging system based on a highly-integrated MIMO radar module** [12111-6]
- 12111 08 **A portable K-band (24 GHz) 3-D millimeter wave imaging system for detecting and dimensioning hidden objects** [12111-7]
- 12111 09 **Submillimeter-wave holograms and imaging neural network: experiments at 220-330 GHz** [12111-9]
- 12111 0A **Video-rate active incoherent millimeter-wave imaging in outdoor environments** [12111-10]

ENABLING TECHNOLOGY

- 12111 0C **Progress of electromagnetic wave leakage absorption film using SWCNT spray** [12111-11]
- 12111 0D **Wavelength-selective pyroelectric THz detectors** [12111-12]

PHENOMENOLOGY

- 12111 0G **Simulations of millimeter-wave reflectivity in free space for dielectric measurement** [12111-15]

COMPUTATIONAL IMAGING AND SIGNAL PROCESSING

- 12111 OI **220 GHz sparse imaging with multi-static aperiodic array** [12111-17]
- 12111 OJ **A multi-resolution analysis-based approach to accelerate data acquisition for near-field MIMO millimeter-wave imaging** [12111-19]
- 12111 OK **Microwave imaging of a walking person using vertical linear arrays** [12111-20]
- 12111 OL **Study of analog multiplexing techniques applied to millimeter wave imaging** [12111-18]

POSTER SESSION

- 12111 OM **Cross polarization and aberrations with Dragonian and equivalent off-axis parabolic mirrors for beam collimation in THz imaging systems** [12111-21]