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**Neil Anthony Salmon
Eddie L. Jacobs**
Editors

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Contents

vii	Conference Committee
ix	Introduction

OPERATIONAL SYSTEMS

8900 02	Reflect-array based mm-wave people screening system (Invited Paper) [8900-1] B. N. Lyons, E. Entchev, M. K. Crowley, Smiths Detection Ireland Ltd. (Ireland)
8900 03	A fast imaging MMW radiometer system for security and safety applications [8900-2] S. Dill, M. Peichl, German Aerospace Ctr. (Germany)
8900 04	An aviation security (AVSEC) screening demonstrator for the detection of non-metallic threats at 28-33 GHz [8900-3] N. A. Salmon, N. Bowring, S. Hutchinson, M. Southgate, D. O'Reilly, Manchester Metropolitan Univ. (United Kingdom)
8900 05	A feasibility study into the screening and imaging of hand luggage for threat items at 35 GHz using an active large aperture (1.6m) security screening imager [8900-4] N. J. Bowring, D. O'Reilly, N. A. Salmon, D. A. Andrews, N.-D. Rezgui, S. W. Harmer, Manchester Metropolitan Univ. (United Kingdom)
8900 06	History and challenges of passive millimeter wave imaging [8900-30] A. N. Pergande, Lockheed Martin Corp. (United States)

OPERATIONAL SYSTEMS II

8900 07	Motion effects in multistatic millimeter-wave imaging systems (Invited Paper) [8900-5] A. Schiessl, S. S. Ahmed, Rohde & Schwarz GmbH & Co. KG (Germany); L.-P. Schmidt, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)
8900 08	A W-band passive imaging system implemented with rotating diffraction antenna technology [8900-6] S. Shylo, Y. Sydorenko, Usikov Institute of Radiophysics and Electronics (Ukraine); D. Wheeler, Radio Physics Solutions Inc. (United States); D. Dundonald, Radio Physics Solutions Ltd. (United Kingdom)
8900 09	Review of the characteristics of 384x288 pixel THz camera for see-through imaging [8900-7] L. Marchese, M. Terroux, F. Genereux, B. Tremblay, M. Bolduc, A. Bergeron, INO (Canada)
8900 0A	Development of an ultra wide band microwave radar based footwear scanning system [8900-8] N. D. Rezgui, N. J. Bowring, D. A. Andrews, S. W. Harmer, M. J. Southgate, D. O'Reilly, Manchester Metropolitan Univ. (United Kingdom)

IMAGE PROCESSING AND TECHNIQUES

- 8900 0D **Target decomposition and polarimetric radar applied to concealed threat detection** [8900-10]
D. O'Reilly, N. Bowring, N. D. Rezgui, D. Andrews, Manchester Metropolitan Univ. (United Kingdom)
- 8900 0E **A calibration concept for passive MW imaging using beam steering by frequency shift and aperture synthesis** [8900-11]
E. Schreiber, M. Peichl, M. Jirousek, German Aerospace Ctr. (Germany)
- 8900 0F **Multispectral THz-VIS passive imaging system for hidden threats visualization** [8900-12]
M. Kowalski, N. Palka, M. Szustakowski, Military Univ. of Technology (Poland)
- 8900 0G **Expanded opportunities of THz passive camera for the detection of concealed objects** [8900-13]
V. A. Trofimov, V. V. Trofimov, I. E. Kuchik, Lomonosov Moscow State Univ. (Russian Federation)
- 8900 0H **Terahertz time-domain spectroscopy for distinguishing different kinds of gunpowder** [8900-14]
T. Gavenda, V. Křesálek, Tomas Bata Univ. of Zlin (Czech Republic)

EMERGING SYSTEMS

- 8900 0M **T-SENSE a millimeter wave scanner for letters (Invited Paper)** [8900-19]
D. Nüßler, S. Heinen, Fraunhofer FHR (Germany); T. Sprenger, D. Hübsch, T. Würschmidt, Hübner GmbH (Germany)
- 8900 0N **Near-field and three-dimensional aperture synthesis imaging** [8900-20]
N. A. Salmon, N. Bowring, Manchester Metropolitan Univ. (United Kingdom)
- 8900 0O **Impulse radar imaging system for concealed object detection** [8900-21]
F. J. W. Podd, M. David, G. Iqbal, F. Hussain, D. Morris, E. Osakue, Y. Yeow, S. Zahir, D. W. Armitage, A. J. Peyton, The Univ. of Manchester (United Kingdom)
- 8900 0P **THz remote sensing with μm resolution** [8900-22]
J. Trontelj, A. Sešek, Univ. of Ljubljana (Slovenia) and Ctr. of Excellence, NAMASTE (Slovenia); A. Švigelj, Ctr. of Excellence, NAMASTE (Slovenia) and Letrika Lab d.o.o. (Slovenia)

DEVICES

- 8900 OR **Broadband THz detection and homodyne mixing using GaAs high-electron-mobility transistor rectifiers (Invited Paper)** [8900-24]
S. Preu, S. Regensburger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); S. Kim, Tanner Research, Inc. (United States); M. Mittendorff, S. Winnerl, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); S. Malzer, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); H. Lu, P. G. Burke, A. C. Gossard, Univ. of California, Santa Barbara (United States); H. B. Weber, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); M. S. Sherwin, Univ. of California, Santa Barbara (United States)
- 8900 OS **Preliminary fabrication and characterization of low-leakage hybrid coaxial cable** [8900-25]
A. Rudnitsky, D. Elbaz, Z. Zalevsky, Bar-Ilan Univ. (Israel)

POSTER SESSION

- 8900 OT **The evaluation of THz-VIS fused images** [8900-26]
M. Kowalski, N. Palka, M. Szustakowski, Military Univ. of Technology (Poland)
- 8900 OU **Detection of the THz waves from the 5m distance** [8900-27]
M. Walczakowski, N. Palka, M. Szustakowski, Military Univ. of Technology (Poland); A. Czerwinski, M. Sypek, Warsaw Univ. of Technology (Poland)
- 8900 OV **THz devices evaluation in a time domain spectroscopy system at 1.55 μm pulse excitation** [8900-28]
I. Kostakis, The Univ. of Manchester (United Kingdom); A. Zandieh, D. Hailu, D. Saeedkia, TeTechS Inc. (Canada); M. Missous, The Univ. of Manchester (United Kingdom)

Author Index

Conference Committee

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Session Chairs

- 1 Operational Systems
Stephen Dill, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany)
Neil Anthony Salmon, MMW Sensors Ltd. (United Kingdom)
- 2 Operational Systems II
Amir Abramovich, Ariel University Center of Samaria (Israel)
Eddie L. Jacobs, University of Memphis (United States)
- 3 Image Processing and Techniques
Eddie L. Jacobs, University of Memphis (United States)
Douglas T. Petkie, Wright State University (United States)
- 4 Medical and Biological Sensors
Nicholas J. Bowring, Manchester Metropolitan University
(United Kingdom)
Neil Anthony Salmon, MMW Sensors Ltd. (United Kingdom)

- 5 Emerging Systems
Nicholas J. Bowring, Manchester Metropolitan University
(United Kingdom)
Christopher A. Schuetz, Phase Sensitive Innovations, Inc. (United States)
- 6 Devices
Amir Abramovich, Ariel University Center of Samaria (Israel)
Markus Peichl, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany)

Introduction

The 6th international conference in the Millimetre Wave and Terahertz Sensors and Technology conference series, as part of the SPIE Europe Security + Defence meeting (held in Dresden this year), presents continued innovations in technologies and their applications for this frequency band.

In this year's conference, commercial security screening portals are presented which operate actively over the 20-80 GHz band, showing some spectacular imagery and making headway with legislative authorities for screening. Also in the lower frequency part of the millimetre wave band a novel active system for the security screening of shoes is introduced to aid rapid throughput of passengers at airports. Polarimetric discrimination techniques from the active remote sensing community are being exploited for threat classification in security screening sensors, which only collect a small number of cross-range pixels over a subject. In the band of a few hundred GHz compact and closed-cycle cryogenically cooled focal plane array detectors are showing promising performance by offering large numbers of pixels with excellent noise performance. These would be well suited for stand-off security screening imagers. The use of Principal Component Analysis is proving useful in the analysis of terahertz (> 0.3 THz) spectra to provide a means to identify suspicious materials contained within letters and parcels, whilst VOx microbolometer cameras (initially developed for the infra-red band) are providing imagery at a few THz of contents. The technology provides a complementary detection capability to x-ray security screening systems for critical types of material. The development of terahertz technology for biomedical applications shows steady progress with interest in nano-particle probes to enhance terahertz signatures from organic tissue.

The conference will continue to push to present emerging technologies which increase system performance and drive down system costs whilst highlighting customer drivers and making known signatures, phenomenology and capabilities in the millimetre to terahertz band. The 7th international conference in this series will take place in Amsterdam 22th-25th September 2014.

Neil Anthony Salmon
Eddie L. Jacobs