PROCEEDINGS OF SPIE

Wireless Sensing, Localization, and Processing VIII

Sohail A. Dianat Michael David Zołtowski Editors

1–2 May 2013 Baltimore, Maryland, United States

Sponsored and Published by SPIE

Volume 8753

Proceedings of SPIE 0277-786X, V. 8753

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

Wireless Sensing, Localization, and Processing VIII, edited by Sohail A. Dianat, Michael David Zoltowski, Proc. of SPIE Vol. 8753, 875301 · © 2013 SPIE · CCC code: 0277-786X/13/\$18 doi: 10.1117/12.2032005

Proc. of SPIE Vol. 8753 875301-1

The papers included 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. The papers published in these proceedings 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 this book:

Author(s), "Title of Paper," in Wireless Sensing, Localization, and Processing VIII, edited by Sohail A. Dianat, Michael David Zoltowski, Proceedings of SPIE Vol. 8753 (SPIE, Bellingham, WA, 2013) Article CID Number.

ISSN: 0277-786X ISBN: 9780819495440

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 © 2013, 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/13/\$18.00.

Printed in the United States of America.

Publication of record for individual papers is online in the SPIE Digital Library.



SPIEDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first 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, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- The first four 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. The complete citation is used on the first page, and an abbreviated version on subsequent pages. Numbers in the index correspond to the last two digits of the six-digit CID Number.

Contents

v Conference Committee

SESSION 1 SENSOR NETWORKS

- 8753 02 **Multi-platform RF emitter localization using extremum seeking control** [8753-1] H. Al Issa, R. Ordóñez, Univ. of Dayton (United States)
- 8753 04 **Optical communication line-of-sight analysis for dismounted warfighter** [8753-3] J. Geng, G. Nicholson, Naval Surface Warfare Ctr. (United States)
- 8753 05 **Performance evaluation of CCI on the forward CDMA channel** [8753-4] M. S. Alam, S. Alsharif, A. H. M. Z. Hossain, Univ. of South Alabama (United States)
- 8753 06 Pulse based sensor networking using mechanical waves through metal substrates [8753-5]
 S. Lorenz, B. Dong, Q. Huo, W. J. Tomlinson Jr., S. Biswas, Michigan State Univ. (United States)

SESSION 2 DIVERSITY AND MULTICARRIER TECHNIQUES

- 8753 07 An investigation of crest factor and power amplifier back-off requirements for non-OFDM multicarrier modulations [8753-6] J. Nieto, Harris Corp. (United States)
- 8753 08 **Turbo MMSE equalizer for spread OFDM signal detection** [8753-8] A. Elghariani, M. Zoltowski, Purdue Univ. (United States)
- 8753 09 Noncoherent unitary space-time codes for wireless MIMO communications [8753-9] X. Chen, E. Walker, Southern Univ. (United States)

SESSION 3 MODULATION AND CHANNEL ESTIMATION

- 8753 OB Quasi-coherent performance of convolutionally-coded continuous phase modulation [8753-11]
 J. A. Norris, J. W. Nieto, Harris Corp. (United States)
- 8753 0D On robust soft-input soft-output demodulators for OFDM systems: when imperfect channel state information is present [8753-27] C. Chen, M. D. Zoltowski, Purdue Univ. (United States)
- 8753 OE Power and spectrally efficient communications: a comparison of linear and nonlinear modulation schemes [8753-13] C. Brown, P. J. Vigneron, Communications Research Ctr. Canada (Canada)

 8753 OF Estimating channel capacity and power transfer efficiency of a multi-layer acousticelectric channel [8753-14]
 S. Chakraborty, K. R. Wilt, G. J. Saulnier, H. A. Scarton, Rensselaer Polytechnic Institute (United States); P. K. Das, Univ. of California, San Diego (United States)

SESSION 4 DETECTION AND LOCALIZATION

8753 0G Low-complexity algorithms for spatio-temporal directional spectrum sensing with applications in cognitive radio [8753-15]

A. Madanayake, The Univ. of Akron (United States) and Univ. of Calgary (Canada); C. Wijenayake, U. Potluri, J. Abeysekara, D. Mugler, The Univ. of Akron (United States)

- 8753 OH **Precise RFID localization in impaired environment through sparse signal recovery** [8753-16] S. Subedi, Y. D. Zhang, M. G. Amin, Villanova Univ. (United States)
- 8753 01 Target position localization in a passive radar system through convex optimization [8753-17]
 B. K. Chalise, Y. D. Zhang, M. G. Amin, Villanova Univ. (United States); B. Himed, Air Force Research Lab. (United States)
- 8753 0J **Collaborative Beamfocusing Radio (COBRA)** [8753-18] J. P. Rode, M. J. Hsu, D. Smith, A. Husain, Ziva Corp. (United States)
- 8753 0K Estimation of the seismic disaster-stricken area based on wireless communication data [8753-19] X. Zhang, X. Xie, B. Ning, G. Sun, National Earthquake Response Support Service (China)

SESSION 5 IMPLEMENTATION AND APPLICATIONS

- 8753 OL Self-organized pulse switching for binary sensing and actuation [8753-20] Q. Huo, B. Dong, S. Biswas, Michigan State Univ. (United States)
- 8753 0M **Fast Fourier sampling for ultra-wide band digital receiver applications** [8753-21] C. Wu, S. Rajan, Defence Research and Development Canada, Ottawa (Canada)
- 8753 0N Combination of spatial diversity and parallel decision feedback equalizer in a Single Input Multiple Output underwater acoustic communication system operating at very high frequencies [8753-22]

V. Skoro Kaskarovska, P.-P. Beaujean, Florida Atlantic Univ. (United States)

8753 00 Regularization in radio tomographic imaging [8753-24]
 R. Sundaram, Gannon Univ. (United States); R. Martin, Air Force Institute of Technology (United States); C. Anderson, U.S. Naval Academy (United States)

Author Index

Conference Committee

Symposium Chair

Kenneth R. Israel, Major General (USAF Retired) (United States)

Symposium Cochair

David A. Whelan, Boeing Defense, Space, and Security (United States)

Conference Chairs

Sohail A. Dianat, Rochester Institute of Technology (United States) Michael David Zoltowski, Purdue University (United States)

Conference Program Committee

John W. Nieto, Harris Corporation (United States) Raghuveer M. Rao, U.S. Army Research Laboratory (United States) Yimin D. Zhang, Villanova University (United States)

Session Chairs

- 1 Sensor Networks John W. Nieto, Harris Corporation (United States)
- 2 Diversity and Multicarrier Techniques **Michael David Zoltowski**, Purdue University (United States)
- 3 Modulation and Channel Estimation James A. Norris, Harris Corporation (United States)
- 4 Detection and Localization John W. Nieto, Harris Corporation (United States)
- 5 Implementation and Applications James A. Norris, Harris Corporation (United States)