

2022 2nd IEEE International Symposium on Joint Communications & Sensing (JC&S 2022)

**Seefeld, Austria
9 – 10 March 2022**



**IEEE Catalog Number: CFP22AE7-POD
ISBN: 978-1-6654-0580-5**

**Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP22AE7-POD
ISBN (Print-On-Demand):	978-1-6654-0580-5
ISBN (Online):	978-1-6654-0579-9

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

Pi-NIC: Indoor Sensing Using Synchronized Off-The-Shelf Wireless Network Interface Cards and Raspberry Pis.....	1
<i>Fangzhan Shi, Wenda Li, Amin Amiri, Shelly Vishwakarma, Chong Tang, Paul Brennan, Kevin Chetty</i>	
Towards Integrated Sensing and Communications for 6G	7
<i>Qi Wang, Anastasios Kakkavas, Xitao Gong, Richard A. Stirling-Gallacher</i>	
Impact of MU-MIMO on Passive Wi-Fi Sensing: Threat or Opportunity?.....	13
<i>Hasan Can Yildirim, Laurent Storrer, Jérôme Louveaux, Philippe De Doncker, François Horlin</i>	
Trade-off in Joint Communications and Sensing with Frequency Modulation Waveforms.....	19
<i>Husheng Li</i>	
Unified Waveform Design in Joint Communications and Sensing with Clutters: Shannon or Cramer-Rao?	25
<i>Husheng Li</i>	
Waveform Design for Joint Radar-Communications with Low Complexity Analog Components.....	31
<i>Aryan Kaushik, Aakash Arora, Christos Tsinos, Christos Masouros, Fan Liu, Symeon Chatzinotas</i>	
Location and Attitude Information Aided Codeword Selection in Millimeter Wave MIMO System	36
<i>Zhibo Yang, Li Chen, Weidong Wang</i>	
Experimental Validation of Superresolution Delay Estimation Algorithm using a 26 GHz Radar Setup.....	42
<i>Roberto Bomfin, Zhongju Li, Ahmad Nimr, Gerhard Fettweis</i>	
A Reconfigurable Intelligent Surface Aided Dual-Function Radar and Communication System.....	48
<i>Shucheng Yan, Shu Cai, Wenchao Xia, Jun Zhang, Shuqiang Xia</i>	
MaxRay: A Raytracing-based Integrated Sensing and Communication Framework	54
<i>M. Arnold, M. Bauhofer, S. Mandelli, M. Henninger, F. Schaich, T. Wild, S. Ten Brink</i>	
Spike-Based Sensing and Communication for Highly Energy-Efficient Sensor Edge Nodes.....	61
<i>Florian Roth, Noémie Bidoul, Teodor Rosca, Meik Dörpinghaus, Denis Flandre, Adrian M. Ionescu, Gerhard Fettweis</i>	
Introducing sensing into future wireless communication systems.....	67
<i>Ali Behravan, Robert Baldemair, Stefan Parkvall, Erik Dahlman, Vijaya Yajnanarayana, Håkan Björkegren, Deep Shrestha</i>	
Integrating TDD Communication and Radar Sensing in Co-Located Planar Array: A Genetic Algorithm Enabled Aperture Design	72
<i>Hadi Alidoustaghdam, Yang Miao, Andre Kokkeler</i>	
Impact of Inter-body Scattering on People Counting with Wi-Fi Sensing	78
<i>Laurent Storrer, Hasan Can Yildirim, Jérôme Louveaux, Philippe De Doncker, Sofie Pollin, François Horlin</i>	

Multiple IRS-Assisted Wideband Dual-Function Radar-Communication	84
<i>Tong Wei, Linlong Wu, Kumar Vijay Mishra, M. R. Bhavani Shankar</i>	
Multi-Band Superresolution Multipath Channel Path Delay Estimation for CIR-Based Localization.....	89
<i>Zhongju Li, Ahmad Nimr, Philipp Schulz, Gerhard Fettweis</i>	
A half-duplex joint communications and sensing system using ZP-OFDM.....	95
<i>Sayed Hossein Dokhanchi, André Noll Barreto, Gerhard Fettweis</i>	
An Experimental Evaluation of Robust Near-Field Radar Localization Using a Massive MIMO Testbed	101
<i>Adham Sakhnini, Sibren De Bast, Mamoun Guenach, André Bourdoux, Hichem Sahli, Sofie Pollin</i>	
Enabling Radio Sensing for Multimodal Intelligent Transportation Systems: From Virtual Testing to Immersive Testbeds.....	107
<i>Paul Schwarzbach, Jonas Ninnemann, Oliver Michler</i>	
Rate and Detection Error-Exponent Tradeoffs of Joint Communication and Sensing	113
<i>Meng-Che Chang, Tuna Erdogan, Shi-Yuan Wang, Matthieu R. Bloch</i>	

Author Index