

International Radar Symposium IRS2021	
Time CEST	21 – 22 June 2021 Virtual Programme
Monday, 21 June 2021	
10:00 - 10:30	Conference Opening <i>Speakers: Peter Knott, Carlos Jahn, Thomas Dallmann</i>
10:30 - 10:40	Break
Focus Session 11 / Automotive Radar for Automated Driving	
10:40 - 11:00	11.1 Moving Target Classification with a Dual Automotive FMCW Radar System using Convolutional Neural Networks
11:00 - 11:20	11.2 IMI-KO-Radar: Interference Measurements of Today's Automotive Radar Sensors
11:20 - 11:40	11.3 Making Vulnerable Road Users More Visible to Radar : A Communications Inspired Approach
11:40 - 12:00	11.4 A Novel Ghost Target Cancellation Scheme using Periodical Interference Sensing for Automotive Chirp Sequence Radar
12:00 - 12:20	11.5 Landmark-based RADAR SLAM for Autonomous Driving
12:20 - 12:30	Break
Keynote	
12:30 - 13:00	<i>Robert D. Palmer</i> Phased Array Weather Radar R&D at the Advanced Radar Research Center at the University of Oklahoma
13:00 - 14:00	Break
Parallel Sessions 1	

	Session 12 / Automotive Radar	Session 13 / Radar Remote Sensing and SSA	Session 14 / Weather Radar
	12.1	13.1	14.1
14:00 - 14:20	The Technique of Measurement of the Pattern of Receive Phased Antenna Array for Automotive Radar	Automatic Target Recognition on High Resolution SAR Images with Deep Learning Domain Adaptation	A new airborne network concept to improve air navigation safety
	12.2	13.2	14.2
14:20 - 14:40	Determine Radar Backscattering of Vegetation for the Automotive 77 GHz Band	ISAR imaging of space objects using large observation angles	Validation of Wind Fields Retrieved by Dual-Doppler Techniques Using a Vertically Pointing Radar
	12.3	13.3	14.3
14:40 - 15:00	FMCW-FMCW Interference Analysis in mm-Wave Radars; An indoor case study and validation by measurements	Translational motion estimation with multistatic ISAR systems	Polarimetric radar-based methods for evaluation of hydrometeor mixtures in numerical weather prediction models
	12.4	13.4	14.4
15:00 - 15:20	Analysis of Automotive Radar Interference in Spatial Domain	Oil slick monitoring using Sentinel-I SAR images	Storm Cell Observation And Prediction Using Polarimetric Weather Radars
	12.5	13.5	
15:20 - 15:40	Characterization of the Effect of Low Pass Filter Response on the Interference in FMCW Automotive Radar	Adaptive Calibration Of The Tandem-L Ground Demonstrator	

15:40 - 16:30	Break
	Keynote
16:30 - 17:00	<i>Matt Markel</i> Radar Challenges and Opportunities for Fully Autonomous Vehicles
	Panel Discussion
17:00 - 18:00	AI and Radar
	Virtual Get Together
18:00 - 19:00	<ul style="list-style-type: none"> • DGON Christian Hülsmeier Award • Networking on the virtual platform "wonder.me"

	Tuesday, 22 June 2021
	Focus Session 21 / Counter-drone surveillance
09:00 - 09:20	21.1 Drone detection with a multistatic C-band radar
09:20 - 09:40	21.2 High-detail X-band RCS simulations of a DJI S900 hexacopter, and comparisons against measurements
09:40 - 10:00	21.3 The Need for Simultaneous Tracking and Recognition in Drone Surveillance Radar
10:00 - 10:20	21.4 Prototyping a Dual-Channel Receiver for use in a Staring Cooperative Radar Network for the Detection of Drones
10:20 - 10:40	21.5 Tracking Analysis of Drone Detection System at Airports: Methodology and results

	Parallel Sessions 2			
	Session 22 / UAV Detection and Counter-Drone	Session 23 / SAR and ISAR Imaging	Session 24 / Localisation and Tracking	Session 25 / Recent Advances in Radar Technology
10:40 - 11:00	22.1	23.1	24.1	25.1
	FAROS-E: a compact and low-cost millimeter wave surveillance radar for real time drone detection and classification	Bistatic SAR Imaging with Satellite Phase Code Modulated Waveforms	Multi-Radar Tracking Optimization for Collaborative Combat	Transmitter for UWB Stepped-Frequency Noise Radar
11:00 - 11:20	22.2	23.2	24.2	25.2
	Developing Drone Experimentation Facility: Progress, Challenges and cUAS Consideration	A Waveform-Encoded SAR Concept Based on a Limited Number of Cyclically-Shifted Chirps	Novel Composite Motion Extraction from Velocity Signature of FMCW Radar for Activity Recognition	Integrated Up-Down Converter for Multi-Band UWB M-Sequence Based Radar
11:20 - 11:40	22.3	23.3	24.3	25.3
	Chebychev moments based Drone Classification, Recognition and Fingerprinting	XY-DemoRad – a low-cost K-band SAR system for UAV application	Ground Target Motion Estimation based on visual measurements	Transmit Beampattern Synthesis for Planar Array with One-bit DACs
11:40 - 12:00	22.4	23.4	24.4	25.4
	Simultaneous Signal Processing with Multiple Coherent Processing Intervals in FMCW Radar for Drone Detection	Radar Imaging Based on Frequency Filtering	Multi-hypothesis Track Initialization With The Use Of Multiple Trajectory Models	Enhanced Cross-correlation Based Translational Motion Compensation in a Passive Radar with Data Gaps Filling
12:00 - 12:20	22.5		24.5	25.5
	Measurements of Birds and Drones with L-Band Staring Radar		Extended Object Tracking assisted Adaptive Multi-Hypothesis Clustering for Radar in Autonomous Driving Domain	Application of polynomial trend removal for suppression of Doppler clutter in drone surveillance radars

12:20 - 12:30	Break
	Keynote
12:30 - 13:00	<i>Vincent Socci</i> Integrating of UAS Operations into the National Airspace System
13:00 - 14:00	Break
	Focus Session 31 / Forward Scatter Radar (FSR)
14:00 - 14:20	31.1 Railway safety radar system with use of FSR
14:20 - 14:40	31.2 Reverse Forward Scatter Radar Power Budget Analysis
14:40 - 15:00	31.3 Iterative Doppler-Only Track initialization enhanced with Direction of Arrival information
15:00 - 15:20	31.4 Multiple Integration Method for Sisar Imaging Radar Systems
15:20 - 15:40	31.5 Experimental results for a Passive Forward Scatter Radar based on OFDM waveforms of opportunity

Parallel Sessions 3				
	Session 32 / Passive, Bistatic and Multi-Static Radar	Session 33 / Cognitive Radar	Session 34 / Radar and Clutter Modelling	Session 35 / New Challenges for Radar Technology
15:40 - 16:00	32.1	33.1	34.1	35.1
	Ship target velocity estimation with multi-transmitter GNSS-based passive radar exploiting long integration times	Domain Adaptation Across Configurations of FMCW Radar For Deep Learning Based Human Activity Classification	Mathematical morphology for clutter removal in airborne radars	IT Security In Radar Sensor Systems – A Methodological Approach
16:00 - 16:20	32.2	33.2	34.2	35.2
	Passive Forward Scattering Signal Extraction Using Second-Order Vertical Synchrosqueezing	An Equivariant Neural Network with Hyperbolic Embedding for Robust Doppler Signal Classification	Generation of VHF ground clutter map employing partially cooperative transmitter	Best Practices IT security - What the customer wanted and what the market offers
16:20 - 16:40	32.3	33.3	34.3	35.3
	Real-Time Selection of FM Transmitter in Passive Bistatic Radar Based on Short-Term Bandwidth Prediction	Target Recognition with Missing Stepped Frequency Backscatter	Hypersonic and Space Target Echo Modeling for Multistatic Passive Radar	4D Passive Radar for Drone Detection and Tracking
16:40 - 17:00	32.4	33.4	34.4	35.4
	DVB-T Passive Radar experimental comparisons of a custom made Passive Radar receiver, RFSoc and a Software Defined Radio	Identification of Parameters of High Order Polynomial Phase Signals	Improved Sea-Clutter Modelling for Multichannel (STAP) Processing	Waveform Design for Beampattern Shaping in 4D-imaging MIMO Radar Systems
17:00 - 17:20	32.5	33.5		35.5
	Expert Systems for Passive Radar Configuration	Detection and Parameters Estimation of Binary Phase Shift Keying Signals in Low Signal to Noise Ratio		Target RCS Modeling and CFAR Detection Performance with Photonics-based Distributed Multi-Band MIMO Radars

17:20 - 17:30	Break
	Closing Session
17:30 - 18:30	<i>Peter Knott, Krzysztof Kulpa</i>