

Welcome Address and/Plenary Session

Monday 23 May ❖ 14h00-15h30

(details to come)

RADAR IMAGING

Monday 23 May ❖ 15h50-18h00

Raw data generation of maritime scenes using MOCEM V4 and PHYS-IQ V1 (keynote paper)

Ruggiero Henri - DGA/ French MoD

Analysis of Degree-of-Polarization on X-band and P-band SAR images

Sum Yuan Hao, Ramanathan Umaiya - DSO National Laboratories (Singapore)

Moving target detection using 2 SAR images

Oriot Hélène, Flécheux Marc - Onera The French Aerospace Lab

Development of High Frequency EM Simulator for SAR Application

Kee Chun Yun⁽¹⁾, Sum Yuan Hao⁽²⁾, Umaiya Ramanathan⁽²⁾, Yang Wei⁽¹⁾, Chia Tse Tong⁽²⁾, Wang Chao-Fu⁽¹⁾

¹Temasek Laboratories, National University of Singapore), ²DSO National Laboratories (Singapore)

The signature of rotated double bounce in urban areas

Guinvarc'h Régis, Thirion-Lefevre Laetitia - SONDRRA/CentraleSupélec

Multifrequency radar imagery and characterization of Hazardous and Noxious Substances at sea

Angelliaume Sebastien⁽¹⁾, Minchew Brent⁽²⁾, Chataing Sophie⁽³⁾, Martineau Philippe⁽¹⁾, Miegebielle Veronique⁽⁴⁾

¹Onera The French Aerospace Lab, ²British Antarctic Survey, ³Centre de documentation de recherche et d'expérimentations sur les pollutions accidentelles des eaux (France), ⁴TOTAL-Scientific and Technical Center Jean Féger (France)

ANTENNA 1

Tuesday 24 May ❖ 8h30-10h00

Metamaterial-based Ultra-low Profile Antennas (keynote paper)

Chen Zhi Ning - National University of Singapore

Recent progress in innovative antennas

Martel Cédric, Gobin Vincent, Crépin Thomas, Boust Fabrice, Prost Daniel, Guibert Laurent, Gabard Benjamin, Quenum Wilfrid

Onera The French Aerospace Lab

Time-Modulated Array for Radar Applications

Euzère Jérôme, Guinvarc'h Régis⁽¹⁾, Uguen Bernard⁽²⁾, Raphael Gillard⁽²⁾ - ¹SONDRRA/CentraleSupélec, ²IETR

Multifunction Antenna for Radar and Communication Applications

Ouedraogo Samir - SONDRRA/CentraleSupélec

TECHNOLOGY

Tuesday 24 May ❖ 10h30-12h10

FMCW Chirp Generation Techniques Based on DDS and Injection-Locked Oscillators

Balon Siegfried, Heng Chun-Huat, Chen Zhi Ning - Department of Electrical and Computer Engineering, National University of Singapore

Determination of the self-heating temperature of AlGaIn/GaN HEMTs in radar operation

Brocero Guillaume^(1,2), Guhel Yannick⁽²⁾, Sipma Jean-Pierre⁽¹⁾, Eudeline Philippe⁽¹⁾, Boudart Bertrand⁽²⁾

¹Thales Air Systems (France), ²Laboratoire des Sciences Appliquées de Cherbourg (France)

InnovSAR Transceiver Architecture at Ka-band

Heng Chun-Huat, Balon Siegfried, Chen Zhi Ning - Department of Electrical and Computer Engineering, National University of Singapore (Singapore)

Netted Radar challenges : synchronization, calibration and environment probing

Sylvain Azarian - SONDR/Onera The French Aerospace Lab

Design of a CMOS 0.18 μm Frequency Synthesizer Dedicated to FMCW radars

Avignon Emilie⁽¹⁾, Azarian Sylvain⁽²⁾ - ¹GEEP/CentraleSupélec, ²SONDR/Onera The French Aerospace Lab

EM & PROPAGATION

Tuesday 24 May ❖ 14h00-15h20

Fast full-wave calculation of electromagnetic fields for scattering by complex media based on weak-form volume integral equation (VIE)

Luo Wan, Ma Zuhui, Su Jiasheng, Huang Shaoying - Singapore university of technology and design (SUTD)

Recent progress in high-performance frequency domain electromagnetic computing at ONERA

Gobin Vincent, Barka André, Juvigny Xavier, Levadoux David, Maurin Julien, Roux Francois-Xavier, Simon Jérôme

Onera The French Aerospace Lab

Processing of Ionospheric Sounding Data

Wee Hsi Wen Alastair⁽¹⁾, Tan Teck Keng Adrian⁽²⁾, Zhang Rui Xue⁽²⁾, Chong Chin Yuan⁽²⁾

¹University of College London (U.K.), ²DSO National Laboratories (Singapore)

Is it possible to retrieve the complex permittivities using double bounce?

Couderc Orian, Thirion-Lefevre Laetitia, Guinvarc'h Régis – SONDR/CentraleSupélec

SIGNAL PROCESSING (1)

Tuesday 24 May ❖ 16h10- 17h50

Radar Detection Schemes for Joint Time and Spatial Correlated Clutter Using Random Matrix Theory

Ovarlez Jean-Philippe⁽¹⁾, Pascal Frédéric⁽²⁾, Couillet Romain⁽²⁾, Greco Maria⁽³⁾

¹SONDR, Onera The French Aerospace Lab, ²L2S, CentraleSupélec, ³University of Pisa

Long Time Coherent Integration for Radar Target Detection

Sun Hongbo - Temasek Laboratories, Nanyang Technological University (Singapore)

Off-grid target detection with normalized matched subspace filter

Rabaste Olivier, Bosse Jonathan, Ovarlez Jean-Philippe - Onera The French Aerospace Lab

A robust signals subspace estimator

Breloy Arnaud⁽¹⁾, Sun Y⁽²⁾, Ginolhac Guillaume⁽³⁾, Babu P⁽²⁾, Palomar Daniel⁽²⁾, Pascal Frederic⁽⁴⁾

¹LEME (France), ²Hong Kong University of Science and Technology (China), ³Laboratoire d'Informatique, Systèmes, Traitement de l'Information et de la Connaissance (France), ⁴LSS, CentraleSupélec

Riemannian geometry for Space-Time Adaptive Processing in radar systems

Degurse Jean-François, Kemkemian Stéphane - THALES Airborne Systems (France)

RADAR

Wednesday 25 May ❖ 8h30-10h00

An Empirical Exploration of a Simple Deghosting Method for Multistatic Radars

Tan Jia Wei, Yap Han Lun - DSO National Laboratories (Singapore)

Coherent MIMO in Radar : where and when it should be used

Lesturgie Marc - SONDR/Onera The French Aerospace Lab

Optimization of Radar Search Patterns Using Integer Programming

Briheche Yann, Barbaresco Frederic, Bennis Fouad, Chablat Damien, Gosselin François - Thales Air Systems (France)

BEM Reference Signal Estimation for an Airborne Passive Radar Antenna Array

Berthillot Clément^(1,2), Santori Agnès⁽¹⁾, Rabaste Olivier⁽³⁾, Poullin Dominique⁽³⁾, Lesturgie Marc^(2,3)

¹French Air Force Research Center, ²SONDR, ³French Aerospace Lab (France)

ANTENNA 2

Wednesday 25 May ❖ 10h30-12h00

Radar Array Design and Processing Through Compressive Sensing (keynote paper)

Paolo Rocca - ELEDIA Research Center (Italy)

Recent Advances in Printed Reflectarrays and Reflectors

Gillard Raphael - IETR (France)

Predicting performance of electrically large reflectarray antennas

Chia Tse Tong - DSO National Laboratories (Singapore)

Connected spiral arrays at low frequencies

Hinostroza Israel⁽¹⁾, Guinvarc'h Régis⁽¹⁾, Haupt Randy⁽²⁾ - ¹SONDRA/CentraleSupélec, ²Colorado School of Mines (USA)

SIGNAL PROCESSING (2)

Thursday 26 May ❖ 8h30-10h20

New Generation of Statistical Radar Processing based on Geometric Science of Information (keynote paper)

Barbaresco Frederic - Thales Air Systems (France)

Fast convolution formulations for radar detection using LASSO

Lee Zeyi⁽¹⁾, Zhan Yanjun⁽¹⁾, Yap Han Lun⁽¹⁾, Pribric Radmila⁽²⁾ - ¹DSO National Laboratories (Singapore), ²Thales Nederland

Radar Detection within Sparse-signal Processing

Pribric Radmila⁽¹⁾, Yap Han Lun⁽²⁾, Zhan Yanjun⁽²⁾, Lee Zeyi⁽²⁾ - ¹Thales Nederland, ²DSO National Laboratories (Singapore)

Coherent MIMO Waveform Design with a Gradient Descent

Tan Uyhour^(1,2), Adnet Claude⁽¹⁾, Rabaste Olivier⁽³⁾, Arlery Fabien⁽¹⁾, Ovarlez Jean-Philippe⁽³⁾, Guyvarch Jean-Paul⁽¹⁾

¹Thales Air Systems (France), ²SONDRA, ³The French Aerospace Lab

Change detection for optical and radar images using a Bayesian nonparametric model coupled with a Markov random field

Prendes Jorge^(1,2), Chabert Marie⁽¹⁾, Pascal Frédéric⁽³⁾, Giros Alain⁽⁴⁾, Tournet Jean-Yves⁽¹⁾

¹Institut de recherche en informatique de Toulouse (France), ²SONDRA - ³L2S, CentraleSupélec, ⁴Centre National d'Etudes Spatiales (France)

DRONES

Thursday 26 May ❖ 10h50-12h00

Micro-Doppler based mini-UAV Classification in Time Critical Radar Systems (keynote paper)

Harmanny Ronny - Thales Nederland

High Altitude Drones for Science

Guérard Jean - Onera The French Aerospace Lab

UAV detection with K band embedded FMCW radar

Hinostroza Israel, Letertre Thierry - SONDRA, CentraleSupélec

HYPERSPECTRAL

Thursday 26 May ❖ 14h00-15h00

Recent advances on hierarchical segmentation of hyperspectral and manifold-valued images

Velasco Santiago - Ecole des Mines de Paris (France)

Top soil properties characterization of disturbed bare soil from airborne hyperspectral imagery

Choy Chee Hoe⁽¹⁾, Ceamanos Xavier⁽²⁾, Chen Marcus Caixing⁽¹⁾, Briottet Xavier⁽²⁾

¹DSO National Laboratories (Singapore), ²Onera The French Aerospace Lab

Sparse estimation of large precision matrices via generalized thresholding Application to Hyperspectral imaging

Bitar Ahmad⁽¹⁾, Ovarlez Jean-Philippe^(1,2), Cheong Loong-Fah⁽³⁾

¹SONDRA, ²Onera The French Aerospace Lab, ³National University of Singapore

Space Technologies
Thursday 26 May ❖ 15h30-17h50

Constellations of very small satellites (keynote paper)

Ruy Ghislain - LUXSPACE (Luxembourg)

Space Activities in Physics and Instrumentation Department at ONERA (keynote paper)

Christophe Bruno, Bresson Alexandre, Foulon Bernard, Guérard Jean, Packan Denis, Raybaut Myriam - Onera The French Aerospace Lab

Nanosatellite Attitude Control using Electromagnetic Actuation

Sihem Tebbani⁽¹⁾, Maria Makarov⁽¹⁾, Cristina Stoica Maniu⁽¹⁾, Israel Hinoestroza⁽²⁾ - ¹CentraleSupélec, ²SONDRA

Opportunities and challenges in Future Small Satellite Missions

Ling Chun Kai, Marcus Chen, Toh Lik Khoong - DSO National Laboratories (Singapore)

Small Sats by NEXEYA

Javanaud Laurent - Nexeya (France)

Space Debris Issue - European Bistatic Breadboard Radar

Saillant Stephane - Onera The French Aerospace Lab

KEYNOTE SESSION

Friday 27 May ❖ 8h30-10h30

Cognitive And Bio-inspired Radar Processing

Graeme Smith - The Ohio State University

Antennas for Body-Centric Wireless Communications

Koichi Ito - Chiba University(Japan)

Radar Absorbing Metamaterials: Dreams and Reality

Boust Fabrice, Lepetit Thomas - Onera The French Aerospace Lab

Closing Session

Friday 27 May 10h30-11h45

(details to come)

Posters

Application of Metal 3D-Printing to Waveguide Arrays

Chio Tan-Huat⁽¹⁾ - Temasek Laboratories @NUS (Singapore)

FMCW-SAR Parameters and Image Reconstruction

Zhang Jianwen, Chan Wai Cheung, Chen Zhi Ning - Department of Electrical and Computer Engineering, National University of Singapore (Singapore)

Understanding Convolutional Neural Networks for SAR Automatic Target Recognition

Foo Jit Soon, Chin Hui Han - DSO National Laboratories (Singapore)

Control design for an octorotor for radar applications

Maria Makarov, Cristina Stoica Maniu and Sihem Tebbani, Israel Hinoestroza

Phase-Shifter's Quantization and Error Analysis in a Concentric Ring Array

Mendes Ruiz Pedro⁽¹⁾, Guinvarc'h Régis⁽¹⁾, Hinoestroza Israel⁽¹⁾, Haupt Randy⁽²⁾ - ¹SONDRA, ²Colorado School of Mines (USA)

Development of NTU SAR system on multi-rotor UAV

Weixian Liu - Temasek Laboratories@NTU (Singapore)

Averaging time/Doppler spectra for the recognition of non-stationary target signatures

Le Brigant Alice^(1,2) - ¹Thales Air Systems, ²Institut Mathématique de Bordeaux (France)

Maneuver Detection Based on Information Geometry and Geodesic Shooting

Pilté Marion⁽¹⁾, Barbaresco Frederic⁽²⁾ - ¹Thales Air Systems, ²Thales Land & air systems (France)

Asymptotic Detection Performance Analysis of the Robust Adaptive Normalized Matched Filter

Ovarlez Jean-Philippe^(1,2), Pascal Frédéric⁽³⁾, Breloy Arnaud^(1,4) - ¹SONDRA, ²ONERA The French Aerospace Lab, ³L2S, CentraleSupélec, ⁴LEME (France)

Anomaly Detection and Estimation in Hyperspectral Imaging using Random Matrix Theory tools

*Terreaux Eugénie⁽¹⁾, Ovarlez Jean-Philippe^(1,2), Pascal Frédéric⁽³⁾
¹SONDRA, ²ONERA The French Aerospace Lab, ³L2S, CentraleSupélec*

Sparsity of large precision matrices and its application in hyperspectral anomaly detection

*Bitar Ahmad⁽¹⁾, Ovarlez Jean-Philippe⁽²⁾, Cheong Lonng-Fah⁽³⁾
¹SONDRA, CentraleSupélec, ²SONDRA, Onera The French Aerospace Lab, ³National University of Singapore*

Efficient Gradient Method for Locally Optimizing the Periodic/Aperiodic Ambiguity Function

Arlery Fabien, Tan Uy Hour, Kassab Rami, Lehmann Frédéric - Thales Air Systems; Telecom SudParis (France)

Robust Adaptive Detection of Buried Pipes using GPR

*Hoarau Quentin⁽¹⁾, Ginolhac Guillaume⁽¹⁾, Atto Abdourrahmane⁽¹⁾, Nicolas Jean-Marie⁽²⁾, Ovarlez Jean-Philippe⁽³⁾
¹Laboratoire d'Informatique, Systèmes, Traitement de l'Information et de la Connaissance (France), ²Laboratoire Traitement et Communication de l'Information [Paris] (France), ³ – ONERA The French Aerospace Lab*

Radar Detector Performance Analysis Using EM Simulations of Targets' RCS

Teo Meng How - DSO National Laboratories (Singapore)

A testbed for bandwidth characterization of non-Foster metamaterials

*Lekkas Konstantinos⁽¹⁾, Avignon-Meseldzija Emilie⁽²⁾, Boust Fabrice⁽³⁾
¹SONDRA, CentraleSupélec, ²GeePs, CentraleSupélec, ³SONDRA, Onera The French Aerospace Lab*

High object detection using single pass interferometric SAR

Brigui Frédéric, Oriot Hélène - Onera The French Aerospace Lab

Detecting moving targets with a test of proportionality of covariance matrices

Taylor Abigael⁽¹⁾, Oriot Hélène⁽¹⁾, Savy Laurent⁽¹⁾, Daout Franck⁽²⁾ - ¹Onera - The French Aerospace Lab, ²SATIE, ENS Cachan (France)

Enhanced Radar Detection by Compressed Sensing Co-processing

Kannan Srinivasan, Dauwels Justin - Nanyang Technological University (Singapore)