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Monday, September 12

Monday, September 12 10:00 - 11:45

S1_1: Workshop on Motion Capture & Localization

Room: Castello Room

Chairs: Alice Buffi (University of Pisa, Italy), Andrea Motroni (University of Pisa, Italy)

Retail Robots with UHF-RFID Moving Antennas enabling 3D Localization

Fabio Bernardini, Andrea Motroni, Alice Buffi and Paolo Nepa (University of Pisa, Italy); Paolo Tripicchio (Scuola Superiore Sant'Anna, Italy); Salvatore D'Avella (Sant'Anna School of Advanced Studies & Mechanical Intelligence Institute, Italy); Luca Del Col (Partitalia, Italy); Alfredo Salvatore (Sensor ID, Italy)

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Exploiting the Orientation of Trilateration UHF RFID Tags in Robot Localization and Mapping

Emidio Di Giampaolo (University of L'Aquila, Italy); Francesco Martinelli (Università di Roma Tor Vergata, Italy); Fabrizio Romanelli (Università Degli Studi di Roma Tor Vergata, Italy)

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Tag Localization by Handheld UHF RFID Reader and Optical Markers

Aristidis Raptopoulos Chatzistefanou and Antonis G Dimitriou (Aristotle University of Thessaloniki, Greece)

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RFID based Gait Speed Measurement using Doppler Shift

Kai Huang, Jintao Zhang, Yicheng Chu and Yongtao Ma (Tianjin University, China)

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UHF-RFID AoA Positioning with Multiple Arrays on Agricultural Machinery

Andrea Motroni, Paolo Nepa and Alice Buffi (University of Pisa, Italy); Marco Pirozzi, Luciano Di Donato, Laura Tomassini and Alessandra Ferraro (INAIL, Italy)

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Considering polarization mismatch in modeling the RFID phase offset variability for tag localization

Emidio Di Giampaolo (University of L'Aquila, Italy); Francesco Martinelli (Università di Roma Tor Vergata, Italy); Fabrizio Romanelli (Università Degli Studi di Roma Tor Vergata, Italy)

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A Fast Method for 3D Localization in SAR RFID System

Yicheng Chu, Yongtao Ma, Kai Huang and Yanxi Fu (Tianjin University, China)
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S1_2: Workshop on Flexible and Printable Electronics and Electromagnetics

Room: Villanova Room

Chairs: Luca Catarinucci (University of Salento, Italy), Riccardo Colella (University of Salento, Italy)

Flexible and Wireless Multi-Sensor Thermometer based on Dual-Heat-Flux Model

Nicoletta Panunzio and Gaetano Marrocco (University of Rome Tor Vergata, Italy)
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A fast method to design and characterize the performance of UHF RFID tags

Yann Houeix, Almudena Rivadeneyra, Carmen Moraila, Noel Rodríguez and Diego P Morales (University of Granada, Spain); Jose F Salmeron (Technical University Munich, Germany)
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Enhanced Radar Cross-section for W-Band Corner reflectors using Ceramic Additive Manufacturing

Kai-Daniel Jenkel, Benedikt Sievert, Andreas Rennings, Masoud Sakaki and Daniel Erni (University of Duisburg-Essen, Germany); Niels Benson (Institute for Nanostructures and Technology (NST), University of Duisburg-Essen, Germany)
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Flexible epidermal device for the RFID-based potentiometric sensing of skin parameters

Francesca Nanni (University of Rome Tor Vergata, Italy); Luca Fiore (Tor Vergata, Italy); Fabiana Arduini and Gaetano Marrocco (University of Rome Tor Vergata, Italy)
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3D Printed Passive Beam-Guiding and Manipulating Devices for the Terahertz Frequency Range

Tobias Kubiczek and Xuan Guo (University of Duisburg-Essen, Germany); Yixiong Zhao (Fraunhofer-Institut für Mikroelektronische Schaltungen und Systeme IMS, Germany); Xuan Liu and Masoud Sakaki (University of Duisburg-Essen, Germany); Niels Benson (Institute for Nanostructures and Technology (NST), University of

Duisburg-Essen, Germany); Jan C Balzer (University of Duisburg-Essen, Germany)
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3D Printing of Antenna Conductive Elements through Fused Filament Techniques

Francesco P. Chietera and Riccardo Colella (University of Salento, Italy); Giacomo Muntoni (University of Cagliari, Italy); Giovanni Andrea Casula (Università di Cagliari, Italy); Giorgio Montisci (University of Cagliari, Italy); Luca Catarinucci (University of Salento, Italy)
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Experimental characterization of Laser Induced Graphene (LIG) antennas for S-band wearable applications in 5G

Alessio Mostaccio and Gianni Antonelli (University of Rome Tor Vergata, Italy); Cecilia Occhiuzzi (University of Roma Tor Vergata, Italy); Eugenio Martinelli (Roma Tor Vergata University, USA); Gaetano Marrocco (University of Rome Tor Vergata, Italy)
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S1_3: The next Backscattering communications for IoT: from ambient sources to 5G-6G infrastructures

Room: Castello Room

Chairs: Sahbi Baccar (ESIGELEC, France), Cecilia Occhiuzzi (University of Roma Tor Vergata, Italy)

Delta RCS Expression of Linear Time-Variant Transponders based on Polarization Modulation

Nicolas Barbot (University Grenoble Alpes, Grenoble INP, LCIS, France)
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A compact, self-powered ambient backscatter device operating in 900 MHz GSM band

Arnaud Vena (University of Montpellier & Institut d'Electronique Et Des Systèmes (IES), France); Neel Samat (University of Montpellier, France); Brice Sorli (University of Montpellier & IES, France); Jean Podlecki (IES, Université Montpellier, Lebanon)
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Double-gain backscatter modulation based on chirp spread spectrum signals

Marc Lazaro (Rovira i Virgili University, Spain); Antonio Lazaro, Ramon Villarino and David Girbau (Universitat Rovira i Virgili, Spain)

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Ambient backscatter communications using LTE cell specific reference signals

Kalle Ruttik, Xiyu Wang, Jingyi Liao and Riku Jäntti (Aalto University, Finland); Dinh-Thuy Phan-Huy (Orange, France)

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Low-cost SDR based backscatter receiver and demodulator

Ricardo Torres (Departamento de Eletrónica Telecomunicações e Informática, Universidade de Aveiro & Instituto de Telecomunicações, Portugal); Ricardo Correia (Instituto de Telecomunicações & University of Aveiro, Portugal); Nuno Borges Carvalho (University of Aveiro/IT Aveiro, Portugal)

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5G Ambient Backscatter Communications: Achievable Range and Power Levels in an Urban Environment

Mariem Lefki (Normandie Univ, UNIROUEN, ESIGELEC, IRSEEM, France); Sahbi Baccar (ESIGELEC, France); Hanen Shall (ISTIC, University of Carthage, France); Mohamed Ghorbel (ATMS, Tunisia); Moncef Kadi (IRSEEM/ESIGELEC, France)

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S1_4: Advanced Antennas and Propagation for RFID

Room: Villanova Room

Chairs: Andrea Michel (University of Pisa, Italy), Ian Pratt (Hangzhou Scientia-IoT Ltd., China)

Improving the directional performance of off-the-shelf UHF RFID antennas

Ian Pratt (Hangzhou Scientia-IoT Ltd., China); Xiaonan Hui (Zhejiang University, China)

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RFID Tag Design with high read range performance for Dual band Applications in UHF Range

Aarti Bansal (Chitkara University Institute of Engineering and Technology, India & Chitkara University, India); Surbhi Sharma and Rajesh Khanna (Thapar University, India)

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Slot-fed Dual-Port Patch Antenna for Compact Harmonic Transponders

Valentina Palazzi, Leonardo Balocchi, Stefania Bonafoni and Luca Roselli (University of Perugia, Italy)

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UHF RFID Reader Sensitivity Requirements Due to Poor Tag Matching

Rui Chen and Shuai Yang (University of Cambridge, United Kingdom (Great Britain)); Richard Penty (Cambridge University, United Kingdom (Great Britain)); Michael J Crisp (University of Cambridge, United Kingdom (Great Britain))

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Compact long-range ceramic RFID tag for on-metal and non-metal applications

Dmitry Dobrykh (ITMO University, Russia & Tel Aviv University, Israel); Ildar Yusupov and Alexey Slobozhanyuk (ITMO University, Russia); Dmitry Filonov (Moscow Institute of Physics and Technology, Russia); Pavel Ginsburg (Tel Aviv University, Israel)

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Design Considerations on a UHF RFID Smart Gate Antenna for the Detection of Tags Embedded into Boots

Andrea Michel, Francesco Lisi, Giuliano Manara and Paolo Nepa (University of Pisa, Italy)

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Tuesday, September 13

Tuesday, September 13 12:00 - 13:30

S2_1: Research and experience on RFID projects

Room: Castello Room

Chairs: Luca Catarinucci (University of Salento, Italy), Benoit Poussot (University Gustave Eiffel, France)

Long-term Monitoring of Soil Surface Deformation with RFID

Arthur Charléty (Université Grenoble Alpes, France); Mathieu Le Breton (Université Grenoble Alpes & Géolithe, France); Laurent Baillet (Université Grenoble Alpes, France); Eric Larose (Université Grenoble Alpes, CNRS, France)

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RFID based implant for knee prosthesis 2.0

Arnaud Vena (University of Montpellier & Institut d'Electronique Et Des Systèmes (IES), France); Stephan Cahuzac and Sylvain Dutrieux (Bonetag, France); Brice Sorli (University of Montpellier & IES, France); Stéphane Naudi (Bonetag, France)

S2_2: Advanced UHF RFID Tags and Reader Antennas for Sensing and Communication in Metallic Environments of IoT

Room: Villanova Room

Chairs: Alice Buffi (University of Pisa, Italy), Francesco P. Chietera (University of Salento, Italy)

Design of a Compact On-Metal RFID Tag with a Pair of Planar Inverted-L Antennas (PILAs)

Jiun Ian Tan (Universirti Tunku Abdul Rahman, Malaysia); Yong Hong Lee (Universiti Tunku Abdul Rahman, Malaysia); Eng Hock Lim (Faculty of Engineering and Science, UTAR, Malaysia)

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A UHF RFID Tag Antenna Sensor Using Stepped Impedance Defected Microstrip Structure and Its Application to Metallic Auxiliary Axle Counter of Train Detection

Wai Son Kuan, Chi-Hou Chio and Kam-weng Tam (University of Macau, Macao); Huawei Lin (University of Macau, China); Paulo Olavo Lima Neves Oliveira and Lwena Susana Benrós Delgado (University of Macau, Macao)

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3D Printed RFID Sensor Based Structural Health Monitoring for Distributed Solar Photovoltaic

Paulo Olavo Lima Neves Oliveira, Lwena Susana Benrós Delgado, Kam-weng Tam, Chi-Hou Chio and Wai Son Kuan (University of Macau, Macao); Huawei Lin (University of Macau, China); Cheng Teng (University of Macau, Macao); Ngai Kong (Crosstech Innovation Group Limited, China); Eng Hock Lim (Faculty of Engineering and Science, UTAR, Malaysia)

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A UHF band quasi-circular-polarization patch antenna design for RFID smart metal-shelf applications

I-Fong Chen (Jinwen University of Science and Technology, Taiwan); Chia-Mei Peng (Feng Chia University & Jinwen University of Science and Technology, Taiwan)

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S2_3: RFID for Healthcare and Wearable Applications I

Room: Castello Room

Chairs: Giulio M. Bianco (University of Roma Tor Vergata, Italy), Gaetano Marrocco (University of Rome Tor Vergata, Italy)

RFPose-GAN: Data Augmentation for RFID based 3D Human Pose Tracking

Chao Yang, Ziqi Wang and Shiwen Mao (Auburn University, USA)

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Towards a Hybrid UHF RFID and NFC Platform for the Security of Medical Data from a Point of Care

Giulio M. Bianco (University of Roma Tor Vergata, Italy); Emanuele Raso (University of Rome Tor Vergata, Italy); Luca Fiore (Tor Vergata, Italy); Alessia Riente and Adina Bianca Barba (University of Rome Tor Vergata, Italy); Carolina Miozzi (University of Rome "Tor Vergata", Italy & Radio6ense Srl, Italy); Lorenzo Bracciale (University of Roma "Tor Vergata", Italy); Fabiana Arduini (University of Rome Tor Vergata, Italy); Pierpaolo Loreti (University of Rome "Tor Vergata", Italy); Gaetano Marrocco (University of Rome Tor Vergata, Italy); Cecilia Occhiuzzi (University of Roma Tor Vergata, Italy)

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Wireless Dopamine Sensing Brain Implant: The Concept and First Results

Stefanus Wirdatmadja, Nikta Pournoori, Toni Björninen and Lauri Sydänheimo (Tampere University, Finland); Merja Voutilainen (University of Helsinki, Finland); Leena Ukkonen (Tampere University, Finland)

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Respiration Monitoring using Doppler-Modulated Depolarizing Chipless Tags

Ashkan Azarfar (Grenoble INP, France); Nicolas Barbot (University Grenoble Alpes, Grenoble INP, LCIS, France); Etienne Perret (Grenoble INP - LCIS, France)

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Radio-pill: RFID miniaturized and battery-free humidity probe for pharmaceutical moisture analysis

Donato Masi (University of Rome Tor Vergata, Italy); Sara Amendola (University of Rome Tor Vergata & Radio6ense srl, Italy); Nicola D'Uva (RADIO6ENSE srl, Italy); Carolina Miozzi (University of Rome "Tor Vergata", Italy & Radio6ense Srl, Italy); Giulio M. Bianco and Cecilia Occhiuzzi (University of Roma Tor Vergata, Italy); Gaetano Marrocco (University of Rome Tor Vergata, Italy)

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S2_4: Wireless Power Transfer Enabling the IoT Energy Harvesting

Room: Villanova Room

Chairs: Francesca Benassi (University of Bologna, Italy), Johanna Virkki (Tampere University, Finland)

Analysis of Rectifiers Under Various Multitone Excitations and Using Different Diodes in Low-Power Conditions

Zhongqi He (Sichuan University, China); Simone Trovarello, Francesca Benassi and Diego Masotti (University of Bologna, Italy); Changjun Liu (Sichuan University, China); Alessandra Costanzo (DEI, University of Bologna, Italy)

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A Biomimetic Resonator for Fabric-Based Wireless Power Transfer, Harvesting, and Charging of Sensors

Dieff Vital (The University of Illinois Chicago, USA)

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Circuit Techniques for Efficient SWIPT

Francesca Benassi, Giacomo Paolini and Diego Masotti (University of Bologna, Italy); Alessandra Costanzo (DEI, University of Bologna, Italy)

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A 13.56 MHz Time-Division Wireless Power and Data Transfer System

Raffaele Salvati, Valentina Palazzi, Luca Roselli and Lorenzo Copparoni (University of Perugia, Italy)

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Miniaturized Triple Band Antenna Applied to Implantable Medical Devices Communications

Vinicius Magno Uchoa Lima Oliveira (University of Aveiro & Instituto de Telecomunicações, Portugal); Nuno Borges Carvalho (University of Aveiro/IT Aveiro, Portugal)

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Wednesday, September 14

Wednesday, September 14 9:00 - 10:15

S3_1: RFID for Healthcare and Wearable Applications II

Room: Castello Room

Chairs: Giulio M. Bianco (University of Roma Tor Vergata, Italy), Gaetano Marrocco (University of Rome Tor Vergata, Italy)

Minimally Invasive Antennas into Aortic Valve Prostheses for RFID-based Trans-

Cardiac Links

Federica Naccarata (University of Rome Tor Vergata, Italy); Cecilia Occhiuzzi and Roberto Verzicco (University of Roma Tor Vergata, Italy); Gaetano Marrocco (University of Rome Tor Vergata, Italy)

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Validation of a Mobile Robot-Integrated RFID and Machine Vision System for Elderly Care Environments

Mirka Leino (Satakunta University of Applied Sciences, Finland); Johanna Virkki (Tampere University, Finland); Pauli Valo, Tommi Lehtinen, Joonas Kortelainen and Sari Merilampi (Satakunta University of Applied Sciences, Finland)

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RFID-based Sensing and Reconstruction of Human Movements for Safety Monitoring of Workers

Riccardo Colella (University of Salento, Italy); Linda Mannini (National Research Council (CNR), Italy); Maria Rosaria Tumolo (Institute for Research on Population and Social Policies, Italy); Saverio Sabina (Institute of Clinical Physiology, Italy); Vincenzo Molinaro and Alberto Ranavolo (INAIL, Italy); Carlo Giacomo Leo (Institute of Clinical Physiology, Italy); Pierpaolo Mincarone (National Research Council (CNR), Brindisi, Italy); Roberto Guarino (Institute of Clinical Physiology (IFC) National Research Council of Italy (CNR), Italy); Luca Catarinucci (University of Salento, Italy)

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Design and Experimentation of an Epidermal RFID-based Thermal Monitoring Sheet (R-TMS) for Microwave Hyperthermia

Francesco Lestini, Nicoletta Panunzio and Gaetano Marrocco (University of Rome Tor Vergata, Italy); Cecilia Occhiuzzi (University of Roma Tor Vergata, Italy)

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Applying RFID Technology to Improve Hospital Logistics

Vinicius Magno Uchoa Lima Oliveira (Hospital Universitario do Piaui - EBSERH)

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S3_2: RF Labels for Wireless Identification and Sensing

Room: Villanova Room

Chairs: Jan C Balzer (University of Duisburg-Essen, Germany), Filippo Costa (University of Pisa, Italy)

A Pressure Sensor based on Piezoresistive Loaded Electromagnetic Absorber

Sandra Rodini, Simone Genovesi, Giuliano Manara and Filippo Costa (University of Pisa, Italy)

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Design and Manufacture of Resonant Chipless Tags in Millimeter-Wave Band

Raymundo Amorim and Nicolas Barbot (University Grenoble Alpes, Grenoble INP, LCIS, France); Romain Siragusa (Grenoble INP, France); Christophe Trehoult and Laurent Lyannaz (Centre Technique du Papier, France); Etienne Perret (Grenoble INP - LCIS, France)

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Experimental Assessment of Passive UHF-RFID Sensor Tags for Environment and Kinematic Data

Andrea Motroni (University of Pisa, Italy); Andrea Ria (Italian National Council of Reasearch (CNR), Italy); Lucanos Strambini (Consiglio Nazionale delle Ricerche, Italy); Paolo Nepa (University of Pisa, Italy)

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Thin and flexible mm-wave chipless RFID tags

Filippo Costa (University of Pisa, Italy); Yuting Zhao (Harbin University of Science and Technology); Francesco Soldi, Simone Genovesi and Giuliano Manara (University of Pisa, Italy)

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Miniaturised UHF RFID Tag Antenna Design for AC Current Sensing

Irfan Ullah (University of Southampton, United Kingdom (Great Britain)); Benito Sanz-Izquierdo and John Batchelor (University of Kent, United Kingdom (Great Britain))

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Wednesday, September 14 10:45 - 11:30

S3_3: Artificial Intelligence for RFID

Room: Castello Room

Chairs: Riccardo Colella (University of Salento, Italy), Andrea Motroni (University of Pisa, Italy)

Prediction of UHF-RFID Tag Performance Utilizing Deep Learning Regression

Miroslav Lach (Technical University of Munich (TUM), Germany); Felix Rutz (Technical University Munich, Germany); Erwin Biebl (Technische Universität München,

Germany)
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Application of Face Recognition Technology in Mobile Payment

Qingyan Liu (LPU, China); Erlito Albina (Lyceum of the Philippines University Manila, Philippines)
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Balanced Neural Architecture Search and Optimization for Specific Emitter Identification

Mingyang Du and Ping Zhong (National University of Defense Technology, China); Xiaohao Cai (University of Southampton, United Kingdom (Great Britain)); Daping Bi and Zhifei Li (National University of Defense Technology, China)
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Room: Villanova Room

Chairs: Jean-Marc Laheurte (Université Gustave Eiffel & ESYCOM Lab, France), Andrea Ria (University of Pisa, Italy)

Introduction of statistics in the analysis of an RFID link in a high density context

Aiman Mughal, Shermila Mostarshedi and Benoit Poussot (University Gustave Eiffel, France); Jean-Marc Laheurte (Université Gustave Eiffel & ESYCOM Lab, France)
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Phase Noise Suppression for Backscatter Communication with Tunable Delay Matching Block

Sicheng Yu (University of Cambridge, United Kingdom (Great Britain)); Richard Penty (Cambridge University, United Kingdom (Great Britain)); Michael J Crisp (University of Cambridge, United Kingdom (Great Britain))
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Anti-Collision Phase Extraction in RFID Systems

Hao Tang, Yan Zhou, Wenfei Song, Lili Chang and Rui Chen (Xidian University, China)
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