2023 IEEE INTERNATIONAL WORKSHOP ON

Technologies for Defense and Security

TECH DEFENSE

NOVEMBER 20-22, 2023

CASA DELL' AVIATORE - ROMA

PROGRAM

IEEE

ATHENA
BUSINESS AND TECHNOLOGY CONSULTING

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Welcome Message from the General Chairs

On behalf of the Organizing Committee, we cordially welcome you to the International *IEEE Workshop on 2023 IEEE International Workshop on Technologies for Defense and Security* (*TechDefense*).

TechDefense is organized by the IEEE Italy Section with its Chapters on Computational Intelligence, System Man and Cybernetics, Magnetics, Geoscience and Remote Sensing South Italy, Oceanic Engineering, Instrumentation and Measurement, Aerospace and Electronic Systems, Young Professional Affinity Group, the IEEE UK and Ireland Section, the IEEE Bulgaria Section, the Naples Chapter of AFCEA, the University of Sannio.

TechDefense aims to cover all areas of defense and security research. Due to the breadth of topics covered, this conference aims to attract the diverse participation and collaboration of academia, industry, defense, and government agencies that will advance the interests of defense and security.

TechDefense offers the opportunity to expand the network of contacts among researchers in the defense and security sector. In a world where technology is changing rapidly, collaborations and multidisciplinary work are the only way to solve research challenges and foster the next generation of scientific discovery.

TechDefense will feature a comprehensive technical program including scientific sessions, a variety of technical panels and tutorials. The conference will also feature keynotes with keynote speakers from government, industry, and research organizations, as well as an exhibition sector for companies in the sector.

The Workshop will be dedicated to, but not limited to, new technologies and applications for: Imaging and Sensing Technology, Materials for Defense Technologies, Radar, Sonar and Acoustic Signal Processing, Data Fusion, Deep Learning, Machine Learning, Marine Technologies, Security, Underwater, Transports & Logistics, Ethics, Education.

The International Program Committee is made up of experts from international research institutions and companies active in the field of defense and security technologies. The event is organized in Rome at the “Casa dell'Aviatore”. Needless to underline the attractive power from a tourist and historical point of view that makes Rome an important point of reference for researchers from overseas.
TechDefense Technical Program consists of oral and poster presentations scheduled over three days. Presentations are organized in a General Session and Special Sessions. Special Sessions aim to create a focus on specific topics, where researchers can make knowledge, familiarize, exchange ideas, and build cooperation.

The received extended abstracts were submitted to a peer-review process. Relevance, quality, significance, and novelty of the scientific contribution were the main attributes taken into consideration for acceptance and publication in the Proceedings. The Proceedings are going to be submitted for publication in the IEEEXplore Digital Library and indexed by SCOPUS. We would like to thank all the reviewers who actively contributed to the selection and quality improvement of the presented works.

TechDefense is honoured to have experts in technology for defense and security as Invited Speakers.

- Erich Staudacher, General Manager AFCEA Europe and VP EMEA AFCEA International - *Bringing them together: AFCEA's support to the cooperation between Academia, Industry, and Armed Forces*;
- Antonio De Maio, University of Naples Federico II, Italy - *Waveform Design for Coexistence between Radar, and Communication Systems: From Theory to Experimental Validation*
- Nicholas G. Paulter, National Institute of Standards and Technology - *Metrology for the Technologies Used in Security and Safety*

We are grateful to the Invited Speakers for joining the Workshop.

Three Round Tables are included in the Programme:

- *Funding for Innovation in Defense and Security*, Flavia La Colla (*APRE, NCP Cluster 3 Civil security for Society di Horizon Europe)*, Ten.Col. Emiliano Cappello (*National Programs*), Ten.Col. Giuseppe Nifosì (*NATO and Extra UE Programs*), Magg. Francesco Corso (UE Programs);
- *Artificial Intelligence for Intelligence Analysis*, Prof. Timothy J. Norman (University of Southampton, UK), Lt.Col. Maurizio D'Amato (Italian Air Force Logistics Command), Prof. Lauro Snidaro (University of Udine, Italy), Prof. Federico Cerutti (University of Brescia, Italy);
- *Future Radar Technology*, Organized by Alfonso Farina and Danilo Orlando; Moderator: Andrea Zanini (Advisor, Presidency of the Council of Ministers); Panelists; Maurizio Cicolani (MBDA Italy Technical Advisor and Integra System Innovation & Technology); Giovanni Pezzi (Analog Devices); Paolo Gervasoni (Analog Devices); Fabio Sterle (Leonardo SpA, Director of Radar Systems Engineering); Giancarlo Chinino (Elettronica SpA, EW/Sigint Scientist); Andrea Pompili (CY4GATE, Chief Scientist); Marco Martorella (Chair in RF and Space Sensing at the University of Birmingham, Vice-Director of the CNIT's National Radar and Surveillance Systems); Laura Anitori (TNO); Ten. Col. Francesco Orlando (Italian Air Force).

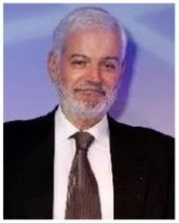
IEEE TechDefense 2023 will offer the following awards, which will be announced and bestowed at the Award Ceremony:

Best Conference Paper Award; Best Paper Presented by a Young Researcher; Best Paper Presented by a Woman; Best Poster Award; Best Paper for Aerospace and Electronic Systems; Best Paper for Methods and Tools for Improving Flight Safety.
We sincerely want to thank all the sponsors and the patronages who made this event possible.

The *2023 IEEE International Workshop on Technologies for Defense and Security (TechDefense)* is about to begin. Enjoy the Workshop!

November 2023

Pasquale **Daponte**
University of Sannio, Italy



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Selex-ES (retired), Italy

Giovanni **Savoldelli Pedrocchi**
AFCEA Chapter of Naples, Italy

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Konrad Wojtowicz, Military University of Technology, Poland

IEEE TechDefence 2023 Keynote Speakers

Plenary Session - Monday November 20 - H 11:50

Bringing them together: AFCEA's support to the cooperation between Academia, Industry, and Armed Forces

Erich **Staudacher**

GENERAL MANAGER AFCEA EUROPE AND VP EMEA AFCEA INTERNATIONAL

ABSTRACT

The talk will highlight the opportunities offered by AFCEA in connecting research institutes, industry and military environment for increasing our common defense and security capability. The international current events demonstrate the vital importance of our goals.

AFCEA is a professional association for those engaged in defense, intelligence, security and related technology disciplines. Our membership comprises military, government, industry and academic organizations and individuals worldwide.

Our offerings include thought leadership, networking, career advancement, media access and professional development opportunities. We help to align technology and strategy to meet the needs of the global defense and security community.

We offer ethically compliant networking opportunities ranging from conferences, symposia and expositions to mentoring, leadership and committee work. The engagement options transcend borders and are available at the association headquarters as well as throughout AFCEA's regions and chapters. It is a truly international organization.

Educational resources include webinars, professional development courses, continuing education units, the award-winning SIGNAL Magazine and a variety of associated SIGNAL Media products. AFCEA also supports STEM education by offering scholarships and grants through the AFCEA Educational Foundation as well as on chapter levels.

SPEAKER BIOGRAPHY

Born in 1954, Major General Erich Staudacher was raised in Stuttgart, Germany.

After joining the Air Force in 1974, his career took him into the business of logistics and planning, policy and concepts at headquarters and ministerial levels.

He served in combat missions, supporting the operations in Bosnia and Afghanistan.

In various assignments he held command at battalion, brigade and division levels both joint and in the Air Force. He also directed the Faculty of Leadership and Management at the Armed Forces Staff College.

In addition to this, Major General Staudacher has served in a variety of senior leadership positions for the German Armed Forces and the Foreign Service, including the Military Adviser to the German Mission to the United Nations, the Vice Director of Staff of the Joint Armed Forces Staff, the Director of Staff of the Air Force, and the Vice Director of the Bundeswehr Planning Office.

Major General Staudacher earned a Master´s degree in Aeronautical and Space Technology in 1978. He also holds a Bachelor´s degree in Economics since 1986. He graduated from the German Armed Forces Staff College, as General Staff Officer in 1990.

Erich Staudacher retired from the military in November of 2016 and then joined AFCEA Europe as General Manager in January 2017.

Besides his official duties he was engaged as Chapter President of the AFCEA chapter Bonn and as member of the Advisory Committee of the Clausewitz Society, Germany. After retirement he also joined the Advisory Council of the Network Centric Operations Industry Consortium (NCOIC).

The General is married and has one adult daughter. He and his wife both live near Bonn.

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Plenary Session - Tuesday November 21 - H 10:50

Waveform Design for Coexistence between Radar and Communication Systems: From Theory to Experimental Validation

Antonio **De Maio**
University of Naples Federico II, Italy

ABSTRACT
This lecture deals with radar waveform design in spectrally dense environments with the goal of optimizing the radar detection performance without affecting the spectral compatibility with some licensed overlaid electromagnetic radiators. The signal synthesis is formalized in terms of some non-convex optimization problems under a variety of constraints reflecting the different characteristics to be forced on the radar waveform as well as the diverse available a-priori information on the environment. Receiver optimization is also included in the design for some situations where the radar operates in the presence of a reverberating scenario. Tradeoffs among detection performance, desirable features of the radar signal, and spectral compatibility are assessed. Finally, experimental results supporting the theory are shown.

SPEAKER BIOGRAPHY
Antonio De Maio (S'01-A'02-M'03-SM'07-F'13) was born in Sorrento, Italy, on June 20, 1974. He received the Dr.Eng. degree (with honors) and the Ph.D. degree in information engineering, both from the University of Naples Federico II, Naples, Italy, in 1998 and 2002, respectively. Currently, he is a Professor with the University of Naples Federico II. His research interest lies in the field of statistical signal processing, with emphasis on radar detection and optimization theory applied to radar signal processing. Dr. De Maio is a Fellow member of IEEE and the recipient of the 2010 IEEE Fred Nathanson Memorial Award as the young (less than 40 years of age) AESS Radar Engineer 2010 whose performance is particularly noteworthy as evidenced by contributions to the radar art over a period of several years, with the following citation for "robust CFAR detection, knowledge-based radar signal processing, and waveform design and diversity".

Plenary Session - Wednesday November 22 - H 11:10

Metrology for the Technologies Used in Security and Safety

Nicholas G. **Paulter**
National Institute of Standards and Technology (NIST), USA

ABSTRACT
This presentation describes the metrology associated with specific technologies used in security and safety applications. The technologies will include different imaging modalities (x-ray, long-wave infrared, microwave/millimeter-wave, and rf), applications (checkpoint security, stand-off/through-barrier, firefighter), and activities (development of test methods, test artifacts, performance requirements, documentary standards).

SPEAKER BIOGRAPHY
Nick Paulter is the Leader of the Security Technologies Group at the National Institute of Standards and Technology (NIST) in Gaithersburg, MD.
In that capacity, he oversees metrology programs related to high-strength fiber characterization, concealed-weapon sensing and imaging, through-wall surveillance, characterization of materials and system used in impact mitigation, traffic control devices, and biometrics for identification. He received an NIST Bronze Medal in 2003 for his work in developing minimum performance requirements for metal detectors and a Department of Commerce Silver Medal in 2018 for research and development of new objective methods to assess image quality in security X-ray systems. Nick is an IEEE Fellow. He is currently the chair of the IEEE TC-10 Subcommittee on Pulse Techniques (SCOPT); chair of the ASTM F12.60 Subcommittee on Controlled Access Security, Search, and Screening Equipment; convener of the IEC TC85 Working Group 22 on the Waveform Parameter Measurements; and the Technical Advisor to the US National Committee to the IEC TC85.

IEEE TechDefense 2023 Round Tables

Monday November 20 - H 14:00

Funding for Innovation in Defense and Security

MODERATOR

Prof. Pasquale Daponte - *University of Sannio, IEEE TechDefense 2023 General Chair*

PANELISTS

Flavia La Colla - *APRE, NCP Cluster 3 Civil security for Society di Horizon Europe*

Ten.Col. Emiliano Cappello - *National Programs*

Ten.Col. Giuseppe Nifosì - *NATO and Extra UE Programs*

Magg. Francesco Corso - *UE Programs*

Tuesday November 21 - H 11:50

Future Radar Technology

CHAIRS
Alfonso **Farina** and Danilo **Orlando**

The "**Future Radar Technology Round Table**" will be a moderator-lead discussion with radar industry experts discussing the future of radar systems and electronic defense platforms enabled by new semiconductor technologies, faster digital processing speeds and extended memory, better thermal designs/materials, new simulation/testing capabilities and new software capabilities such as artificial intelligence and machine learning for cognitive systems. The experts will review these new capabilities and project how these underlying improvements will shape future radar systems and multi-function platforms.

MODERATOR
Andrea Zanini, *Advisor, Presidency of the Council of Ministers*

PANELISTS
Maurizio **Cicolani**, *MBDA Italy Technical Advisor and Integra System Innovation & Technology*;

Giovanni **Pezzi**, *Analog Devices*;

Paolo **Gervasoni**, *Analog Devices*;

Fabio **Sterle**, *Leonardo SpA, Director of Radar Systems Engineering*;

Giancarlo **Chinino**, *Elettronica SpA, EW/Sigint Scientist*;

Andrea **Pompili**, *CY4GATE, Chief Scientist*;

Marco **Martorella**, *Chair in RF and Space Sensing at the University of Birmingham, Vice-Director of the CNIT's National Radar and Surveillance Systems*;

Laura **Anitori**, *TNO*;

Ten. Col. Francesco **Orlando**, *Italian Air Force.*

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Tuesday November 22 - H 12:10

Artificial Intelligence for Intelligence Analysis

This roundtable aims to provide answers on the responsible use of artificial intelligence for intelligence analysis.
The roundtable will feature experts from the Italian Air Force and three academics discussing such a question from four complementary perspectives.
The roundtable will feature opening statements from each of the panellists, followed by questions, including from the public.

PANELISTS

Prof. Federico Cerutti is an Associate Professor at the University of Brescia, and Chair of the University of Brescia branch of the Italian National Cybersecurity Laboratory. He is a Rita Levi-Montalcini laureate, a highly prestigious fellowship from the Italian Ministry of Research with an acceptance rate lower than 8%. Previously, he served as Academic Director of the Data Science Academy of Cardiff University and as programme leader for the Master in Artificial Intelligence of Cardiff University.
He is serving as a member of the PhD Board for AI for Security course of the Italian National PhD Program in Artificial Intelligence, which trains researchers in the cutting-edge topics of Artificial Intelligence while ensuring an integrated and "complex" vision of the ecosystem of AI technologies and solutions. He is also an Honorary Senior Lecturer at Cardiff University (UK) and Visiting Fellow at the University of Southampton (UK). His research focuses mainly on artificial intelligence and nonmonotonic reasoning (especially argumentation theory) and decision support with uncertainty and trust. He attracted more than 1 million Euros combined in research funding, including projects funded by the US Army Research Laboratory (ARL) and the European Office of Aerospace Research and Development (EOARD).

Lt.Col. Maurizio D'Amato is ICT representative of the Italian Air Force Logistics Command. He graduated in 1997 from Italian Air Force Academy in Aeronautical Science and spent 10 years as a software developer and project manager in the Armed Force Data Center. He has served as member of a Command and Control System Dev Team and project manager in NATO Programming Center (Glons, Belgium) for 2008-2011. He was a Defence General Staff Officer for 4 years dealing with information systems projects. He is taking care of the management and coordination of innovation and data governance national events. He is coordinating the design and implementation of data management and data science projects with industrial support and collaboration. His main interests include a strong synergy and interdisciplinary expertise in innovation and programmatic aspects of development, interoperability, cybersecurity and evolution of information systems, operational digital services and IT infrastructures. He is currently head of the Digital Transformation Office in the 3rd Division of the Logistics Command.

Prof. Timothy J. Norman is Professor of Computer Science and Head of the Agents, Interaction and Complexity Group at the University of Southampton. He read Electronic and Electrical Engineering at University of Wales, Swansea, then graduated in 1997 with a Ph.D. in Computer Science from University College London in the area of AI planning and scheduling. After working as a postdoc at Queen Mary University of London, he moved to the University of Aberdeen in 1999 where he was promoted to Professor in 2009. He joined the Agents Interaction and Complexity Group at ECS Southampton in 2016. He is currently Head of ECS, a thriving school with a strong collaborative and interdisciplinary research culture that provides an excellent environment for high-quality research. He is also Director of the UKRI MINDS Centre for Doctoral Training (CDT), working with colleagues to deliver on our vision, building the CDT community and helping develop exceptional young researchers.
His research expertise is in multi-agent systems, specifically in the development of novel methods for learning and reasoning under uncertainty, enabling us to develop safe and trustworthy autonomous systems that work effectively with people.

Prof. Lauro Snidaro is an Associate Professor in Computer Science at the University of Udine. His main interests include Data/Information Fusion, Computer Vision, Pattern Recognition, Machine Learning, Multimedia, Video understanding. He actively publishes in international journals and conferences and has co-authored more than 100 papers. He was the appointed Italian member of the NATO Task Group on Information Fusion Demonstrator (TGonIFD) IST-038/RTG-016 for 2003-05, of the NATO Information Technology Panel Task Group IST-065/RTG-028 on “Information Fusion in Asymmetric Operations” (RTGonIFAO) for 2007-2009, and of the NATO Research Task Group on “Information Filtering and Multi-Source Information Fusion” IST-106-RTG-051 for 2011-2014. He is currently the appointed Italian member for the NATO Task Group on “Multi-Level Fusion of Hard and Soft Information” (IST-132) for 2015-17.
He cooperates with international industries and research centres and is involved in several international projects on multi-sensor data fusion. He has been invited speaker at international symposiums and meetings in Armenia, Bulgaria, Spain, United States. In 2011 he was program co-chair of the 16th International Conference on Image Analysis and Processing (ICIAP) and in 2019 he was program co-chair of the 22nd International Conference on Information Fusion.
He has co-organized several special sessions at the International Conference on Information Fusion and the IEEE International Conference on Advanced Video and Signal-Based Surveillance. He was the lead editor of the volume “Context-Enhanced Information Fusion – Boosting Real-World Performance with Domain Knowledge”, Springer, 2016. He is special issue organizer and “Fusion for Signal/Image Processing and Understanding” Area Editor of the Information Fusion journal (Elsevier). He is “High level fusion” Area Editor of the ISIF Journal of Advances in Information Fusion. He serves as a computer science project reviewer for the Italian Ministry of University and Research. He regularly serves as reviewer for 28 international journals and 26 conferences.

IEEE TechDefense 2023 Venue

IEEE TechDefense 2023 will be held at "**Casa dell'Aviatore**".

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Viale dell'Università 20, Rome
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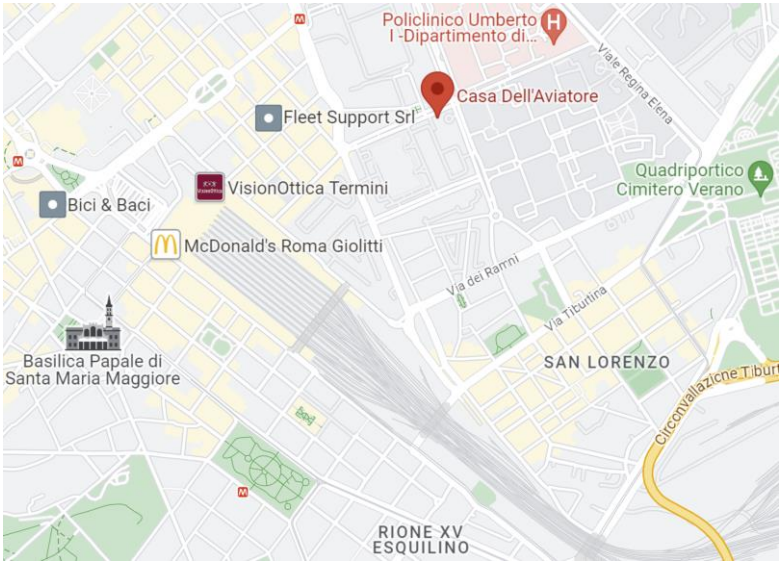
Use the QRCode to open the location on *Google Maps*



IEEE TechDefense 2023 Social Events

WELCOME PARTY

Monday November 20 - H 18:40

The Welcome Party will be held on Monday, November 20 - 19.00 - at **"La Casa dell'Aviatore".**

GALA DINNER

Tuesday November 21 - H 20:00

The Gala Dinner will be held on Tuesday, November 21 - 20.00 - at **"La Casa dell'Aviatore" - Sala Soci.**

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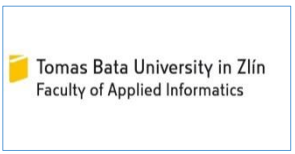
IEEE TechDefense 2023 Patronages





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Program Schedule - Monday, November 20

MONDAY, NOVEMBER 20		
	Sala Baracca	**Sala del Gioco**
09:30 - 11:00	Technical Session S1.1 - General Session	Technical Session S1.2 - Special Session #01 - Analytical methods and tools for aerospace operational flight Safety - PART I
11:00 - 11:20	COFFEE BREAK - Atrio Baracca	
11:20 - 11:50	OPENING CEREMONY	
11:50 - 12:10	PLENARY SESSION - INVITED SPEAKER Erich Staudacher, *AFCEA Europe* Bringing them together: AFCEA's support to the cooperation between Academia, Industry, and Armed Forces	
12:10 - 13:00	AFCEA Panel Session - Part I	
13:00 - 14:00	LUNCH - Sala Soci	
14:00 - 15:00	ROUND TABLE - Funding for Innovation in Defense and Security	
15:00 - 15:40	AFCEA Panel Session - Part II	
	Sala Baracca	**Sala del Gioco**
15:40 - 16:40	Technical Session S2.1 - Special Session #05 - Non-invasive monitoring of psychophysiological states of military personnel during operation and training	Technical Session S2.2 - Special Session #09 - Battlefield Operational Technology and Secure Internet of Battlefield Things
16:40 - 17:00	COFFEE BREAK - Atrio Baracca	
17:00 - 18:30	Technical Session S3.1 - Special Session #13 - Non-contact measurement systems for defense and security	Technical Session S3.2 - Special Session #01 - Analytical methods and tools for aerospace operational flight Safety - PART II
19:00 - 21:00	WELCOME PARTY - Atrio Baracca	

Program Schedule - Tuesday, November 21

TUESDAY, NOVEMBER 21		
	Sala Baracca	**Sala del Gioco**
09:00 - 10:30	Technical Session S4.1 - Special Session #08 - Young Researchers Activities in Technologies for Defense and Security - PART I	Technical Session S4.2 - Special Session #07 - Remote sensing technologies and advanced methods for safe and security applications - PART I
10:30 - 10:50	COFFEE BREAK - Atrio Baracca	
10:50 - 11:50	PLENARY SESSION - INVITED SPEAKER Antonio De Maio, *University of Naples Federico II, Italy* Waveform Design for Coexistence between Radar and Communication Systems: From Theory to Experimental Validation	
11:50 - 12:50	ROUND TABLE - Future Radar Technology	
12:50 - 14:15	LUNCH / POSTER SESSION - Atrio Baracca	
	Sala Baracca	**Sala del Gioco**
14:15 - 15:30	Technical Session S5.1 - Special Session #08 - Young Researchers Activities in Technologies for Defense and Security - PART II	Technical Session S5.2 - Special Session #07 - Remote sensing technologies and advanced methods for safe and security applications - PART II
15:30 - 16:00	COFFEE BREAK - Atrio Baracca	
16:00 - 17:30	Technical Session S6.1 Special Session #15 - IEEE Women in Engineering Focused on Cybersecurity	Technical Session 6.2 - Special Session #14 - ISaCAGE: integration and coexistence of sensing and communication systems that share the same spatial and spectrum resources
20:00	GALA DINNER - Sala Soci	

Program Schedule - Wednesday, November 22

WEDNESDAY, NOVEMBER 22		
	Sala Baracca	**Sala del Gioco**
09:30 - 10:45	Technical Session S7.1 - Special Session #06 - Innovation in Energy Harvesting Technologies for Military and Civil Use	Technical Session S7.2 - Special Session #02 - Performance Evaluation in the Era of Heterogeneous Continuum Cloud Computing
10:45 - 11:10	COFFEE BREAK - Atrio Baracca	
11:10 - 12:10	PLENARY SESSION - INVITED SPEAKER #3 Nicholas G. Paulter, *NIST, USA* Metrology for the Technologies Used in Security and Safety	
12:10 - 13:10	ROUND TABLE - Artificial Intelligence for Intelligence Analysis	
13:10 - 14:30	LUNCH - Atrio Baracca	
	Sala Baracca	**Sala del Gioco**
14:30 - 16:00	Technical Session S8.1 Special Session #12 - Instrumentation and Measurement Technology for Defense and Security	Technical Session S8.2 - Special Session #04 - Artificial Intelligence for Intelligence Analysis
16:00 - 16:20	CLOSING AND AWARD CEREMONY - Sala Baracca	

Technical Program - Monday, November 20

09:00 - 18:00	*Casa dell'Aviatore* **REGISTRATIONS**

09:30 - 10:45	*Sala Baracca - Casa dell'Aviatore* **Session 1.1 - General Session** **Chair:** Ioan Tudosa, *University of Sannio, Italy*

09:30 **Detecting Targeted Phishing Websites for Brand Protection and Cyber Defence Using Computer Vision**
Carlos Pires, Centro de Investigação, Desenvolvimento e Inovação Da Academia Militar, Portugal
José Borges, Centro de Investigação, Desenvolvimento e Inovação Da Academia Militar, Portugal

09:45 **Analysis of Adaptive Beamforming Techniques for Photonics-Based Coherent MIMO Radars**
Salvatore Maresca, National Research Council, Italy
Antonio Malacarne, CNIT, Italy
Malik Muhammad Haris Amir, Scuola Superiore Sant'Anna, Italy
Gaurav Pandey, Scuola Superiore Sant'Anna, Italy
Antonella Bogoni, CNIT, Italy
Mirco Scaffardi, CNIT, Italy

10:00 **Machine Learning for Ship Detection With Radar**
Tomás Duque Morgado Santos Pedro, GMVIS SKYSOFT, Portugal
João Cintra, GMVIS SKYSOFT, Portugal
Alan Oliveira, University of Lisbon, Portugal
Nuno Cruz Garcia, University of Lisbon, Portugal

10:15 **A Tile-Based Approach to SatCom User Terminal Design**
Sherif R. Zahran, University of Calabria, Italy
Alessandro Fonte, SIAE Microelectronics, Italy

Alberto Colzani, SIAE Microelectronics, Italy
Matteo Fumagalli, SIAE Microelectronics, Italy
Emilio Arnieri, SIAE Microelectronics, Italy
Giandomenico Amendola, University of Calabria, Italy
Luigi Boccia, University of Calabria, Italy

10:30 **A Review of Measurement Methods for Traceable Calibration of Waveform Recorders Used in ElectroShock Weapons (ESWs) Testing**
Ioan Tudosa, University of Sannio, Italy
Pasquale Daponte, University of Sannio, Italy
Luca De Vito, University of Sannio, Italy
Francesco Picariello, University of Sannio, Italy
Sergio Rapuano, University of Sannio, Italy

09:30 - 11:00 *Sala del Gioco - Casa dell'Aviatore*
Session 1.2 - Analytical methods and tools for aerospace operational flight Safety - PART I
Chairs: Valerio Scordamaglia, *Mediterranean University of Reggio Calabria*
Michele Buonsanti, *Mediterranean University of Reggio Calabria*

09:30 **Fault Detection and Reconfiguration Strategies for Quadcopter Drones Deployed in Disaster Scenarios**
Alessia Ferraro, University of Reggio Calabria, Italy

09:45 **Proactive and Predictive Risk Management in Aviation Safety: A Corporate Strategic Approach**
Massimo Paradisi, Italian Air Force, Italy

10:00 **Fatigue Model in Military Aviation**
Spela Jurgele, Cranfield University, United Kingdom
Graham Braithwaite, Cranfield University, United Kingdom
Jim Nixon, Cranfield University, United Kingdom

10:15 **New CRM Model in Italian Air Force**
Giuseppe Fauci, Italian Air Force, Italy

10:30 **A Consensus-Based Kalman Filter for Target Localization in Emergency Scenarios**
Salvatore Rosario Bassolillo, University of Campania Luigi Vanvitelli, Italy
Immacolata Notaro, University of Campania Luigi Vanvitelli, Italy
Egidio D'Amato, University of Naples Parthenope, Italy
Massimiliano Mattei, University of Naples Federico II, Italy

10:45 **ILS of Medium Complexity AUV: A Challenge for the ASD S3000**
Ettore De Francesco, SeTeL, Italy
Ruggero De Francesco, SeTeL, Italy
Fabio Leccese, Roma Tre University, Italy

11:00 - 11:20	*Atrio Baracca - Casa dell'Aviatore* **COFFEE BREAK**

11:20 - 11:50	*Sala Baracca - Casa dell'Aviatore* **OPENING CEREMONY - WELCOME ADDRESSES**

11:50 - 12:10	*Sala Baracca - Casa dell'Aviatore* **PLENARY SESSION - KEYNOTE SPEAKER** **Chair**: Giovanni Savoldelli Pedrocchi, *AFCEA Naples Cahpter*

Bringing them together: AFCEA's support to the cooperation between Academia, Industry, and Armed Forces

Erich Staudacher, *AFCEA Europe*

12:10 - 13:00	*Sala Baracca - Casa dell'Aviatore* **AFCEA Panel Session - PART I** **Chair**: Giovanni Savoldelli Pedrocchi, *AFCEA Chapter of Naples*

12:10 **AKRON CYBER SHIELD - An Innovative Dual Use Cryptographic Platform with Personal Mobile Hardware Encryption Devices**
Michele Cortese (AKRON C4SEC SRL), Antonio Corbo Esposito (University of Cassino, Italy), Walter Miele (AKRON C4SEC SRL)

12:30 **Innovations to Supply Chain and Logistics (Iot, Machine Learning, Analytics)**
Gianluca Pinelli (SMS Engineering)

12:50 **In the waves of Innovation. The Navy's evolution and cutting-edge underwater R&D serving national and international security and prosperity**
Captain Claudio Brega (Chief of Strategic Innovation Office, Navy General Staff)

13:00 - 14:00	*Sala Soci - Casa dell'Aviatore* **LUNCH**

14:00 - 15:00	*Sala Baracca - Casa dell'Aviatore* **ROUND TABLE - Funding for Innovation in Defense and Security** **Moderator:** Pasquale Daponte, *University of Sannio, Italy*

PANELISTS

Flavia **La Colla** - *APRE, NCP Cluster 3 Civil security for Society di Horizon Europe*
Ltc. (A) Antonio **Palermo** - *NATO funding for defence research, technology and innovation and the Italian National Military Research Plan*
Maj. (A) Francesco **Corso** - *EU funding for defence research, technology and innovation*

15:00 - 15:40 *Sala Baracca - Casa dell'Aviatore*
AFCEA Panel Session – PART II
Chair: Giovanni Savoldelli Pedrocchi, *AFCEA Chapter of Naples*

15:00 **Value Beyond Measure: TEC Eurolab's Role as Your Defense Industry Partner**
Michela Giovanardi (Technical Sales Engineer - TEC Eurolab)

15:20 **Adaptive mission management systems**
Claudia Conte (University of Naples Federico II)

15:40 - 16:40 *Sala Baracca - Casa dell'Aviatore*
Session 2.1 - Non-invasive monitoring of psychophysiological states of military personnel during operation and training
Chairs: Daniela Cardone, *University G. d'Annunzio of Chieti-Pescara, Italy*
David Perpetuini, *University G. d'Annunzio of Chieti-Pescara, Italy*

15:40 **Temporal Stability of Resting Respiratory Sinus Arrhythmia: Choosing the Quantification Method**
Marko Šarlija, University of Zadar, Croatia
Siniša Popović, University of Zagreb, Croatia
Tanja Jovanovic, Wayne State University, USA
Krešimir Ćosić, University of Zagreb, Croatia

15:55 **Assessment of Cognitive Workload During Flight Training by Means of Hybrid NIR/LWIR Imaging**
Davide Tomasino, Next2U srl, Italy
Manish Chinthakindi, Next2U srl, Italy
Alessandro Tiberio, Next2U srl, Italy
Chandrika Patibandla, Next2U srl, Italy
Michele Tritto, Next2U srl, Italy
Sergio Nocco, Next2U srl, Italy

16:10 **A Review of Methods and Measurement Instrumentation for Sweat Testing**
Martina Imbriglia, University of Sannio, Italy
Luca De Vito, University of Sannio, Italy
Giuseppe Caporaso, ICS Maugeri, Italy
Vincenzo Provitera, ICS Maugeri, Italy
Maria Nolano, ICS Maugeri, Italy

16:25 **Cooperation and Mental States Neurophysiological Assessment for Pilots' Training and Expertise Evaluation**
Gianluca Borghini, Sapienza University of Rome, Italy
Andrea Giorgi, Sapienza University of Rome, Italy
Vincenzo Ronca, Sapienza University of Rome, Italy
Lorenzo Mezzadri, Urbe Aero ATO, Italy
Rossella Capotorto, Sapienza University of Rome, Italy
Gianluca Di Flumeri, Sapienza University of Rome, Italy
Fabio Babiloni, Sapienza University of Rome, Italy
Pietro Aricò, Sapienza University of Rome, Italy

15:40 - 16:40	*Sala del Gioco - Casa dell'Aviatore*
	Session 2.2 - Battlefield Operational Technology and Secure Internet of Battlefield Things
	Chair: Antonio Mario Caruso, *University of Salento, Italy*

15:40 **A Military IdAM System Based on SSI and ORCON**
Stefano Bistarelli, University of Perugia, Italy
Chiara Luchini, University of Perugia, University of Firenze, Italy
Francesco Santini, University of Perugia, Italy

15:55 **IoT, ML for Combat Identification: Technologies to Reduce Blue on Blue Events in Military Battlefield**
Antonio Caruso, University of Salento, Italy

16:10 **Integrating Blockchain for Enhanced Coordination and Security in Semi-Centralized Robotic Swarms**
Antonio Carovilla, University of Molise, Italy
Remo Pareschi, University of Molise, Italy
Francesco Salzano, University of Molise, Italy

16:25 **Developing the physical backbone for digital technologies: key factors for Data Center projects**
Alberto Caccia, Lombardini22, Italy

16:40 - 17:00	*Atrio Baracca - Casa dell'Aviatore*
	COFFEE BREAK

17:00 - 18:30	*Sala Baracca - Casa dell'Aviatore*
	Session 3.1 - Non-contact measurement systems for defense and security
	Chair: Milena Martarelli, *Università Politecnica delle Marche, Italy*

17:00 **Measurement Technique Based on Hyperspectral Imaging for Occulted Blood Stain Detection**
Nicola Giulietti, University of Pavia, Italy
Silvia Discepolo, Università Politecnica delle Marche, Italy
Paolo Castellini, Università Politecnica delle Marche, Italy
Milena Martarelli, Università Politecnica delle Marche, Italy

17:15 **Active Thermography for Gunshot Residue (GSR) Pattern Estimation on Textiles**
Vittoria Medici, Università Politecnica Delle Marche, Italy
Nicola Paone, Università Politecnica Delle Marche, Italy
Milena Martarelli, Università Politecnica Delle Marche, Italy
Giuseppe Pandarese, Università Politecnica Delle Marche, Italy
Paolo Castellini, Università Politecnica Delle Marche, Italy
Vito Alessandro Spinelli, Gabinetto Interregionale Polizia Scientifica per le Marche e L'Abruzzo, Italy
Gaetano Rizza, Gabinetto Interregionale Polizia Scientifica per le Marche e L'Abruzzo, Italy
Giuseppe Riccio, Gabinetto Interregionale Polizia Scientifica per le Marche e L'Abruzzo, Italy
Massimiliano Olivieri, Gabinetto Interregionale Polizia Scientifica per le Marche e L'Abruzzo, Italy

17:30 **Determination of UAV Propellers Speed With FMCW Radar: Comparison With Accelerometer Data**
Gianluca Ciattaglia, Università Politecnica delle Marche, Italy
Ennio Gambi, Università Politecnica delle Marche, Italy
Grazia Iadarola, Università Politecnica delle Marche, Italy
Susanna Spinsante, Università Politecnica delle Marche, Italy

17:45 **A Novel, Multimodal, High Throughput Screening Microscope Platform for Automating the Analysis a of Vast Populations of Forensics Traces**
Costas Balas, Technical University of Crete, Spectricon, Greece
Charalampos Boras, Technical University of Crete, Spectricon, Greece
Christos Chousos, Technical University of Crete, Spectricon, Greece
Nikolaos Kaminakis, Spectricon, Greece
Nathanail Kortsalioudakis, Technical University of Crete, Spectricon, Greece
Christos Rossos, Spectricon, Greece
Athanasios Tsapras, Spectricon, Greece
Christos Tsiaousis, Technical University of Crete, Spectricon, Greece

18:00 **Speed Measurement of Projectile Using Vision System and Least Square Regression With Different Amplitude Sliding Window**
Enrico Ferlinghetti, University of Brescia, Italy
Simone Pasinetti, University of Brescia, Italy
Matteo Lancini, University of Brescia, Italy

18:15 **A Jury Test Methodology for the Assessment of User Rifle Trigger Tactile Preference**
Valentina Pasquinelli, Università Politecnica delle Marche, Italy
Milena Martarelli, Università Politecnica delle Marche, Italy
Barbara Lonzi, Benelli Armi spa, Italy

Antonio D'Antuono, Benelli Armi spa, Italy
Matteo Bizzaro, Benelli Armi spa, Italy
Lorenzo Scalise, Università Politecnica delle Marche, Italy

17:00 - 18:30 *Sala del Gioco - Casa dell'Aviatore*

Session 3.2 - Analytical methods and tools for aerospace operational flight Safety - PART II

Chairs: Valerio Scordamaglia, *Mediterranean University of Reggio Calabria*
Michele Buonsanti, *Mediterranean University of Reggio Calabria*

17:00 **Innovations for High Operational Resilience in Air Navigation and Landing Both for Civil and Military Missions Either in Peace, Crisis or War / Conflict Time**
Massimiliano Ferla (Thales Italia SpA)

17:15 **Coordinated Trajectory Planning for Ground-Based Multi-Robot Systems Used in Exploration and Surveillance Missions**
Alessia Ferraro, University of Reggio Calabria, Italy
Valerio Scordamaglia, University of Reggio Calabria, Italy

17:30 **Development of an Innovative Approach Based on Liveware Performances in the Integrated Aeronautical Systems**
Giuseppe Fauci, Italian Air Force, Italy
Marco Gajetti, Politecnico di Torino, Italy
Davide De Iuliis, Politecnico di Torino, Italy

17:45 **Path Planning and Risk Assessment in Unmanned Specific Operations**
Egidio D'Amato, University of Naples Parthenope, Italy
Angelo Antonio Nastasi, University of Naples Parthenope, Italy
Immacolata Notaro, University of Campania Luigi Vanvitelli, Italy

18:00 **A Risk Analysis Model for the Sustainable Management of a Space Project**
Francesco Ventura, CROWN Research Scarl, Italy
James Jesse Ronald James, CROWN Research Scarl, Italy
Giuseppe Caristi, University of Messina, Italy
Daniela Barba, QBM S.r.l., Italy

18:15 **Reliable Data Delivery Over LEO Satellite Networks**
Giuseppe Araniti, University Mediterranea of Reggio Calabria, Italy
Antonella Molinaro, University Mediterranea of Reggio Calabria, Italy
Sara Pizzi, University Mediterranea of Reggio Calabria, Italy
Federica Rinaldi, University Mediterranea of Reggio Calabria, Italy
Chiara Suraci, University Mediterranea of Reggio Calabria, Italy

19:00 - 21:00 *Atrio Baracca - Casa dell'Aviatore*

WELCOME PARTY

Technical Program - Tuesday, November 21

09:00 - 17:00	*Casa dell'Aviatore* **REGISTRATIONS**

09:00 - 10:15	*Sala Baracca - Casa dell'Aviatore* **Session 4.1 - Young Researchers Activities in Technologies for Defense and Security - PART I** **Chairs:** Santi Concetto Pavone, *University of Catania, Italy* Martina Teresa Bevacqua, *University Mediterranea of Reggio Calabria, Italy*

09:00 **Wideband Antennas for Cubesat Platforms: Design and Multiphysics Analysis**
Matteo Bruno Lodi, University of Cagliari, Italy
Giacomo Muntoni, University of Cagliari, Italy
Marco Simone, University of Catania, Italy
Alessandro Fanti, University of Cagliari, Italy
Giuseppe Mazzarella, University of Cagliari, Italy

09:15 **Multi-Drone Systems for Search and Rescue Operations: Problems, Technical Solutions and Open Issues**
Alessia Ferraro, University of Reggio Calabria, Italy
Vito Nardi, University of Reggio Calabria, Italy
Egidio D'Amato, University of Naples Parthenope, Italy
Immacolata Notaro, University of Campania Luigi Vanvitelli, Italy
Valerio Scordamaglia, University of Reggio Calabria, Italy

09:30 **Technologies for IMINT and SIGINT**
Giulia Venturi, Zanasi and Partners, Italy
Domenico Frascà, Zanasi and Partners, Italy
Maria Ustenko, Zanasi and Partners, Italy
Alessandro Zanasi, Zanasi and Partners, Italy

09:45 **Maritime Drones: Role in the Military Doctrines of NATO and EU Member States, Market Study and Procurement Needs**
Paola Fratantoni, Zanasi and Partners, Italy
Domenico Frascà, Zanasi and Partners, Italy
Alessandro Zanasi, Zanasi and Partners, Italy

10:00 **Meta-Covers for Antennas**
Stefano Vellucci, Niccolò Cusano University, Italy
Alessio Monti, Roma Tre University, Italy
Mirko Barbuto, Niccolò Cusano University, Italy
Michela Longhi, Niccolò Cusano University, Italy
Zahra Hamzavi-Zarghani, Roma Tre University, Italy
Davide Ramaccia, Roma Tre University, Italy
Luca Stefanini, Roma Tre University, Italy
Alessandro Toscano, Roma Tre University, Italy
Filiberto Bilotti, Roma Tre University, Italy

09:00 - 10:30 *Sala del Gioco - Casa dell'Aviatore*
Session 4.2 - Remote sensing technologies and advanced methods for safe and security applications - PART I
Chairs: Ferdinando Nunziata, *University of Napoli Parthenope, Italy*
Maurizio Migliaccio, *University of Napoli Parthenope, Italy*

09:00 **The Remote Sensing Applied in the Italian Navy Hydrographic Office Operations**
Matteo Guideri (Italian Navy Hydrographic Institute, Genoa, Italy)

09:15 **Digital Security by Design: A Review of Combined Hardware-Software-Based CyberSecurity With Compartmentalization**
Rabia Khan, University of Strathclyde, United Kingdom
Kinan Ghanem, University of Strathclyde, United Kingdom
Federico Coffele, University of Strathclyde, United Kingdom

09:30 **An Integrated Monitoring System for Aerial Drones and Underwater ROVs**
Niccolò Cecchinato, University of Udine, Italy
Andrea Toma, University of Udine, Italy
Ivan Scagnetto, University of Udine, Italy
Carlo Drioli, University of Udine, Italy
GianLuca Foresti, University of Udine, Italy

09:45 **Autonomous Intelligent Remote Sensing System for Military Threat Object Detection**
Lorenzo Epifani, Università del Salento, Italy
Antonio Caruso, University of Salento, Italy

10:00 **Game-Theoretic Mission Planning of Drone Teams in Autonomous Detection and Recognition**
Vittorio U. Castrillo, CIRA - Italian Aerospace Research Centre, Italy
Ivan Iudice, CIRA - Italian Aerospace Research Centre, Italy
Domenico Pascarella, CIRA - Italian Aerospace Research Centre, Italy
Gianpaolo Pigliasco, CIRA - Italian Aerospace Research Centre, Italy
Angela Vozella, CIRA - Italian Aerospace Research Centre, Italy

10:15 **OHB ITALIA - Solutions for Space Responsiveness**
Franco Boldrini (OHB Italia - Director Business Development)

10:30 - 10:50	*Atrio Baracca - Casa dell'Aviatore* **COFFEE BREAK**

10:50 - 11:50	*Sala Baracca - Casa dell'Aviatore* **PLENARY SESSION - KEYNOTE SPEAKER** **Chair:** Alfonso Farina, *Selex-ES (retired), Rome, Italy*

Waveform Design for Coexistence between Radar and Communication Systems: From Theory to Experimental Validation

Antonio De Maio, *University of Naples Federico II, Italy*

11:50 - 12:50	*Sala Baracca - Casa dell'Aviatore* **ROUND TABLE - Future Radar Technology** **Organized by Alfonso Farina and Danilo Orlando** **Moderator:** Andrea Zanini, *Advisor, Presidency of the Council of Ministers*

PANELISTS

Maurizio **Cicolani**, *MBDA Italy Technical Advisor and Integra System Innovation & Technology*;

Giovanni **Pezzi**, *Analog Devices*;

Paolo **Gervasoni**, *Analog Devices*;

Fabio **Sterle**, *Leonardo SpA, Director of Radar Systems Engineering*;

Giancarlo **Chinino**, *Elettronica SpA, EW/Sigint Scientist*;

Andrea **Pompili**, *CY4GATE, Chief Scientist*;

Marco **Martorella**, *Chair in RF and Space Sensing at the University of Birmingham, Vice-Director of the CNIT's National Radar and Surveillance Systems*;

Laura **Anitori**, *TNO*;

Ten. Col. Francesco **Orlando**, *Italian Air Force*.

12:50 - 14:15	*Atrio Baracca - Casa dell'Aviatore* **LUNCH / POSTER SESSION** **Chairs:** Fabio Leccese, *Roma Tre University of Rome, Italy* Galia Marinova, *Technical University of Sofia, Bulgaria*

PS01 **Optimal Reconfiguration Planning for Large UAV Groups**
Valerii Uspenskyi, National Technical University Kharkiv Polytechnic Institute, Ukraine
Natalia Shyriaieva, National Technical University Kharkiv Polytechnic Institute, Ukraine

PS02 **Protecting NextG Military Networks With Convolutional Neural Networks**
Emilio Paolini, Sma-RTy Italia SRL, Italy
Gianluca Perotto, Sma-RTy Italia SRL, Italy
Luca Valcarenghi, Scuola Superiore Sant'Anna, Italy
Federico Civerchia, Sma-RTy Italia SRL, Italy
Luca Maggiani, Sma-RTy Italia SRL, Italy
Nicola Andriolli, National Research Council, Italy

PS03 **Boosting the Automated Information Processing for Reconnaissance**
Refiz Duro, AIT Austrian Institute of Technology GmbH, Austria
Medina Andresel, AIT Austrian Institute of Technology GmbH, Austria
Christoph Singewald, Syncpoint GmbH, Austria
Veronika Siska, AIT Austrian Institute of Technology GmbH, Austria
Axel Weißenfeld, AIT Austrian Institute of Technology GmbH, Austria
Dražen Ignjatović, AIT Austrian Institute of Technology GmbH, Austria

PS04 **Sub 6 GHz Smartphone Antenna With Dual-Band Monopole Resonators for 5G Communications**
Haleh Jahanbakhsh Basherlou, Edinburgh Napier University, United Kingdom
Naser Ojaroudi Parchin, Edinburgh Napier University, United Kingdom
Mohammad Alibakhshikenari, Universidad Carlos III de Madrid, Spain
Chan Hwang See, Edinburgh Napier University, United Kingdom

PS05 **Tri-Band Endfire Antenna Array With Wide Angles of Beam-Scanning Capability for 5G mmWave Mobile Communication**
Ali Zidour, University of M'hamed Bougara, Algeria
Mouloud Ayad, University of Bouira, Algeria
Mohammad Alibakhshikenari, Universidad Carlos III de Madrid, Spain
Haleh Jahanbakhsh Basherlou, Edinburgh Napier University, United Kingdom
Naser Ojaroudi Parchin, Edinburgh Napier University, United Kingdom
Chan Hwang See, Edinburgh Napier University, United Kingdom

PS06 **Performance Parameters Consideration for 5G Backhaul Network**
Inas Assim Sawad, Brunel University, United Kingdom
Rajagopal Nilavalan, Brunel University, United Kingdom
Hamed Al-Raweshidy, Brunel University, United Kingdom

PS07 **A Perception Engine in Automotive FMCW Radar**
Kaluri V Rangarao, University of Hyderabad, India
Atul Negi, University of Hyderabad, India

PS08 **AI-Driven Method for UAV Pilot Training Process Optimization in a Virtual Environment**
Przemyslaw Wojciechowski, Military University of Technology, Poland
Konrad Wojtowicz, Military University of Technology, Poland
Jan Błaszczyk, Calisia University, Poland

PS09 **Sensitivity Assessment of a Phase Measurement Method Used in a Waveform Recorder Traceable Testing for ElectroShock Weapons (ESW)**
Ioan Tudosa, University of Sannio, Italy

Pasquale Daponte, University of Sannio, Italy
Luca De Vito, University of Sannio, Italy
Francesco Picariello, University of Sannio, Italy
Sergio Rapuano, University of Sannio, Italy

PS10 **Measurement Uncertainty Model for Relative Visual Localization of UAV by a Monocular Camera**
Pasquale Daponte, University of Sannio, Italy
Luca De Vito, University of Sannio, Italy
Arman Neyestani, University of Sannio, Italy
Francesco Picariello, University of Sannio, Italy
Ioan Tudosa, University of Sannio, Italy

PS11 **Accurate Measurements of Material Properties at Microwave Frequencies**
Andrea Alimenti, Roma Tre University, Italy
Nicola Pompeo, Roma Tre University, Italy
Enrico Silva, Roma Tre University, Italy
Kostiantyn Torokhtii, Roma Tre University, Italy
Pablo Vidal García, Roma Tre University, Italy

PS12 **Cryogenic Characterization of Microwave Devices**
Andrea Alimenti, Roma Tre University, Italy
Nicola Pompeo, Roma Tre University, Italy
Enrico Silva, Roma Tre University, Italy
Kostiantyn Torokhtii, Roma Tre University, Italy
Pablo Vidal García, Roma Tre University, Italy

14:15 - 15:30 *Sala Baracca - Casa dell'Aviatore*
Session 5.1 - Young Researchers Activities in Technologies for Defense and Security - PART II
Chairs: Santi Concetto Pavone, *University of Catania, Italy*
Martina Teresa Bevacqua, *University Mediterranea of Reggio Calabria, Italy*

14:15 **Plasma Effects on Electromagnetic Wave Scattering in Suborbital Hypersonic Flight**
Salvatore Esposito, Politecnico di Torino, Italy
Domenic D'Ambrosio, Politecnico di Torino, Italy
Giuseppe Vecchi, Politecnico di Torino, Italy
Andrea Scarabosio, LINKS Foundation, Italy

14:30 **Design of Passive and Wideband Radar Absorbing Materials Comprising Resistive Frequency Selective Surfaces**
Vincenzo Violi, University of Pisa, University of Reggio Calabria, CNIT, Italy
Danilo Brizi, University of Pisa, CNIT, Italy

14:45 **Polarimetric Sparse Iterative Procedures for DOA Estimation**
Massimo Rosamilia, University of Naples Federico II, Italy
Marco Boddi, University of Naples Federico II, Italy
Augusto Aubry, University of Naples Federico II, Italy
Antonio De Maio, University of Naples Federico II, Italy

15:00 **Innovative Application Contexts for Focusing Devices Based on Leaky Waves**
Edoardo Negri, Sapienza University of Rome, Italy
Walter Fuscaldo, National Research Council, Italy
Paolo Burghignoli, Sapienza University of Rome, Italy
Alessandro Galli, Sapienza University of Rome, Italy

15:15 **Effect of Partial Fine-Tuning of SqueezeNet on MSTAR for Automatic Military Target Recognition**
Michela Raimondi, Università Politecnica Delle Marche, Italy
Antonio Nocera, Università Politecnica Delle Marche, Italy
Linda Senigagliesi, Università Politecnica Delle Marche, Italy
Gianluca Ciattaglia, Università Politecnica Delle Marche, Italy
Ennio Gambi, Università Politecnica Delle Marche, Italy

14:15 - 15:30 *Sala del Gioco - Casa dell'Aviatore*
Session 5.2 - Remote sensing technologies and advanced methods for safe and security applications - PART II
Chairs: Ferdinando Nunziata, *University of Napoli Parthenope, Italy*
Maurizio Migliaccio, *University of Napoli Parthenope, Italy*

14:15 **Coprime Synthetic Aperture Radar: State of the Art and Application to Ship Detection**
Antonio Iodice, Università di Napoli Federico II, Italy
Gerardo Di Martino, Università di Napoli Federico II, Italy

14:30 **Artificial Intelligence Based Algorithm for On-Board Multispectral Image Compression**
Gianmarco Bencivenni, University of Rome Tor Vergata, Italy
Giorgia Guerrisi, University of Rome Tor Vergata, Italy
Giovanni Schiavon, University of Rome Tor Vergata, Italy
Fabio Del Frate, University of Rome Tor Vergata, Italy

14:45 **Protecting Infrastructures From Natural and Anthropogenic Hazards: The EISAC.it Initiative**
Salvatore Stramondo, Istituto Nazionale di Geofisica e Vulcanologia, Italy
Vittorio Rosato, University Campus Biomedico di Roma, Italy
Christian Bignami, Istituto Nazionale di Geofisica e Vulcanologia, Italy
Marco Polcari, Istituto Nazionale di Geofisica e Vulcanologia, Italy

15:00 **Spatio-Temporal Variability Coastline Analysis Using C-Band Dual-Polarimetric Synthetic Aperture Radar Measurements**
Farah Rasheed Abbasi, Parthenope University of Naples, Italy
Andrea Buono, Parthenope University of Naples, Italy
Ferdinando Nunziata, Parthenope University of Naples, Italy
Maurizio Migliaccio, Parthenope University of Naples, Italy

15:15 **Hyperspectral Imaging and Super Resolution Techniques in Defence Scenarios**
C.C. Gianluca Cellamare, *CISAM, Italian Navy*

15:30 - 16:00 *Atrio Barcca - Casa dell'Aviatore*
COFFEE BREAK

16:00 - 17:30 *Sala Baracca - Casa dell'Aviatore*
Session 6.1 - IEEE Women in Engineering Focused on Cybersecurity
Chairs: Galia Marinova, *Technical University of Sofia, Bulgaria*
Vasil Guliashki, *Bulgarian Academy of Sciences, Bulgaria*

16:00 **Women in Electrical Engineering - Serbian Story: Mission Ongoing!**
Biljana Stosic, University of Niš, Serbia
Zlatica D. Marinkovic, University of Niš, Serbia

16:15 **Assessment of Sagittal Alignment of Cervical Spine in Seated Individuals on Stable and Unstable Base**
Silviya Filkova, Medical University of Varna, Bulgaria
Miroslav Markov, Technical University of Varna, Bulgaria
Valentina Markova, Technical University of Varna, Bulgaria

16:30 **Exploring Essential Wireless Technologies for Autonomous Vehicles**
Svetozar Stefanov, Technical University of Varna, Bulgaria
Martin Ivanov, Technical University of Varna, Bulgaria
Miroslav Markov, Technical University of Varna, Bulgaria
Zornica Petrova, Technical University of Varna, Bulgaria
Valentina Markova, Technical University of Varna, Bulgaria

16:45 **Effect of the Hardware Logical Encryption Type and Location on the Circuit Security**
Eriselda Malaj, Aleksander Moisiu University - Durres, Albania
Galia Marinova, Technical University of Sofia, Bulgaria

17:00 **Study of the Secrecy in Hardware Logical Encryption With Multiple Bit Keys**
Eriselda Malaj, Aleksander Moisiu University - Durres, Albania
Galia Marinova, Technical University of Sofia, Bulgaria

17:15 **A Machine Learning Approach Improving University Campus Security**
Vassil Guliashki, Institute of Information Technologies - BAS, Bulgaria
Emiliano M. Mankolli, Aleksander Moisiu University of Durres, Albania
Senada Bushati, Aleksander Moisiu University of Durres, Albania

16:00 - 17:30 *Sala del Gioco - Casa dell'Aviatore*
Session 6.2 - ISaCAGE: integration and coexistence of sensing and communication systems that share the same spatial and spectrum resources
Chair: Antonio De Maio, *University of Naples Federico II, Italy*

16:00 **Energy Threshold Setting With Bounded Performance for Sensing and Communications Under the n-u Model**
Angelo Coluccia, University of Salento, Italy
Alessio Fascista, University of Salento, Italy

16:15 **Power-Aperture Product Resource Allocation for Radar ISAC**
Augusto Aubry, University of Naples Federico II, Italy
Antonio De Maio, University of Naples Federico II, Italy
Luca Pallotta, University of Basilicata, Italy

16:30 **A New Detection Approach for Radio Frequency Interferences Corrupting Airborne L-Band SAR Data**
Alessandro Di Vincenzo, Università Degli Studi di Napoli Parthenope, IREA-CNR, Italy
Antonio Natale, IREA-CNR, Italy
Antonio De Maio, University of Naples Federico II, Italy
Paolo Berardino, IREA-CNR, Italy
Carmen Esposito, IREA-CNR, Italy
Riccardo Lanari, IREA-CNR, Italy
Stefano Perna, Università Degli Studi di Napoli Parthenope, IREA-CNR, Italy

16:45 **Advanced Radiating Systems Based on Array-Fed 2-D Leaky-Wave Antennas for Sensing and Communication Applications**
Mikhail Madji, Sapienza University of Rome, Italy
Edoardo Negri, Sapienza University of Rome, Italy
Walter Fuscaldo, National Research Council, Italy
Davide Comite, Sapienza University of Rome, Italy
Paolo Burghignoli, Sapienza University of Rome, Italy
Alessandro Galli, Sapienza University of Rome, Italy

17:00 **Joint Data and Channel Estimation in Radar-Enabled Backscatter Communications**
Luca Venturino, University of Cassino and Southern Lazio, Italy
Emanuele Grossi, University of Cassino and Southern Lazio, Italy
Jeremy Johnston, Columbia University, USA
Marco Lops, University of Naples Federico II, Italy
Xiaodong Wang, Columbia University, USA

17:15 **Electronically Steerable Parasitic Array Radiators (ESPAR) for Efficient Phased Array Design**
Raffaele De Marco, University of Calabria, Italy
Emilio Arnieri, University of Calabria, Italy
Giandomenico Amendola, University of Calabria, Italy
Luigi Boccia, University of Calabria, Italy

20:00 - 23:00	*Sala Soci - Casa dell'Aviatore* **GALA DINNER**

Technical Program - Wednesday, November 22

09:00 - 12:00	*Casa dell'Aviatore* **REGISTRATIONS**

09:30 - 10:30	*Sala Baracca - Casa dell'Aviatore* **Session 7.1 - Innovation in Energy Harvesting Technologies for Military and Civil Use** **Chairs:** Daniele Davino, *University of Sannio, Italy* Luigi Costanzo, *University of Campania Luigi Vanvitelli, Italy* Massimo Vitelli, *University of Campania Luigi Vanvitelli, Italy*

09:30 **Energy Harvesting From Bearings Rotation in a Seeding Agriculture Machine**
Maurizio Repetto, Politecnico di Torino, Italy
Claudia Barattini, Politecnico di Torino, Italy
Luca Dimauro, Politecnico di Torino, Italy

09:45 **From Heat to Power: Assessing Thermoelectric Energy Harvesting for Self-Sustainable Sensors**
Chiara Lenz, ETH Zurich, Switzerland
Sergei Vostrikov, ETH Zurich, Switzerland
Philipp Mayer, ETH Zurich, Switzerland
Michele Magno, ETH Zurich, Switzerland

10:00 **Piezoelectric Energy Harvesting for Autonomous Sensors in Structural Health Monitoring of Bearings and Ballscrews**
Giacomo Clementi, University of Perugia, Italy
Luca Gammaitoni, University of Perugia, Italy
Francesco Cottone, University of Perugia, Italy
Luca Castellini, Wisepower srl, Italy

10:15 **Experimental Characterization of a Water Droplet Energy Harvester**
Luigi Costanzo, Università degli Studi della Campania Luigi Vanvitelli, Italy
Alessandro Lo Schiavo, Università degli Studi della Campania Luigi Vanvitelli, Italy
Massimo Vitelli, Università degli Studi della Campania Luigi Vanvitelli, Italy

09:30 - 10:45	*Sala del Gioco - Casa dell'Aviatore* **Session 7.2 - Performance Evaluation in the Era of Heterogeneous Continuum Cloud Computing** **Chair:** Daniele Tessera, *Università Cattolica del Sacro Cuore, Italy*

09:30 **FLWB: A Workbench Platform for Performance Evaluation of Federated Learning Algorithms**
Emiliano Casalicchio, Sapienza University of Rome, Italy
Simone Esposito, Sapienza University of Rome, Italy
Ahmed Abbas Mohsin Al-Saedi, Blekinge Institute of Technology, Sweden

09:45 **Evaluating Defense Services Performance on Military Cloud Continuum Systems**
Marco Gribaudo, Politecnico di Milano, Italy
Mauro Iacono, Università degli Studi della Campania Luigi Vanvitelli, Italy
Alexander Levis, George Mason University, USA

10:00 **Target Detection of Darkweb Hidden Services Network Through MoniTOR and Social Network Analysis**
Federico Borgonovo, Università Cattolica del Sacro Cuore, Italy
Alastair R. Cerri Fisher, Università Cattolica del Sacro Cuore, Italy
Giulia Porrino, Università Cattolica del Sacro Cuore, Italy
Silvano R. Lucini, Università Cattolica del Sacro Cuore, Italy
Luca Martignon, InTheCyber, Italy

10:15 **Digital Chain of Custody Operational Framework**
Gabriel Pestana, INOV - INESC Inovação, Portugal
Wilson Antunes, Instituto Universitário Militar, Centro de Investigação da Academia Militar, Portugal
Júlio Carvalho, Instituto Universitário Militar, Centro de Investigação da Academia Militar, Portugal

10:30 **Towards Optimized Design and Deployment of a Military Supply Chain on Federated Cloud Continuum Supported by Simulation-Based Performance Evaluation**
Gennaro Junior Pezzullo, Università della Campania Luigi Vanvitelli, Italy
Beniamino Di Martino, Università della Campania Luigi Vanvitelli, Italy
Claudio Beggiato, Italian Army, Italy

10:45 - 11:10	*Atrio Baracca - Casa dell'Aviatore* **COFFEE BREAK**

11:10 - 12:10	*Sala Baracca - Casa dell'Aviatore* **PLENARY SESSION - KEYNOTE SPEAKER** **Chair:** Sergio Rapuano, *University of Sannio, Italy*

Metrology for the Technologies Used in Security and Safety

Nicholas G. Paulter, *NIST, USA*

12:10 - 13:10	*Sala Baracca - Casa dell'Aviatore* **ROUND TABLE - Artificial Intelligence for Intelligence Analysis** **Moderator:** Luca De Vito, *University of Sannio, Italy*

PANELISTS

Prof. Federico **Cerutti**, *University of Brescia, Italy*;
Lt.Col. Maurizio **D'Amato**, *Italian Air Force Logistics Command*;
Prof. Timothy J. **Norman**, *University of Southampton, UK*;
Prof. Lauro **Snidaro**, *University of Brescia, Italy.*

13:10 - 14:30	*Atrio Baracca - Casa dell'Aviatore* **LUNCH / POSTER SESSION**

14:30 - 16:00	*Sala Baracca - Casa dell'Aviatore* **Session 8.1 - Instrumentation and Measurement Technology for Defense and Security** **Chairs:** Luca De Vito, *University of Sannio, Italy* Leopoldo Angrisani, *University of Naples Federico II, Italy*

14:30 **AI Predictive Algorithm for Anti-Rollover Prevention of Military Vehicles**
A. Tota, Politecnico di Torino, Italy
F. Velardocchia, Politecnico di Torino, Italy
L. Lamberti, Sezione Mobilità e Contromobilità, Centro Polifunzionale di Sperimentazione, Italy
G. Paciullo, Sezione Mobilità e Contromobilità, Centro Polifunzionale di Sperimentazione, Italy
G. Perboli, Politecnico di Torino, Italy

14:45 **PSD Profiles for Dynamic and Durability Tests of Military Off-Road Vehicle Racks**
F. Velardocchia, Politecnico di Torino, Italy
L. Dimauro, Politecnico di Torino, Italy
G. Paciullo, Sezione Mobilità e Contromobilità, Centro Polifunzionale di Sperimentazione, Italy
M. Trevisi, Sezione Mobilità e Contromobilità, Centro Polifunzionale di Sperimentazione, Italy

15:00 **Radar Surveillance for Drones Applications**
Fausta Mattei, University of Naples Federico II and University of Bergamo, Italy

15:15 **Development of a Pulsed HIRF Facility for MIL-STD 464 D Testing - From Design to Characterization**
Magg. Daniele Ferrante, Italian Army Multifuncional Experimentation Center

15:30 **Cooling System Based on Minichannels for Thermal Management of CBRN Equipment**
Miguel Fernandes, CINAMIL Academia Militar, Portugal
Miguel Mendes, LAETA, IDMEC - Instituto Superior Técnico, Universidade de Lisboa, Portugal
Ana Moita, IN + - Instituto Superior Técnico, Universidade de Lisboa, Portugal

15:45 **Quantum Key Distribution for Defense and Security**
Tommaso Occhipinti, QTI

14:30 - 16:00 *Sala del Gioco - Casa dell'Aviatore*
Session 8.2 - Artificial Intelligence for Intelligence Analysis
Chairs: Timothy J. Norman, *University of Southampton, UK*
Lauro Snidaro, *University of Udine, Italy*
Federico Cerutti, *University of Brescia, Italy*

14:30 **A Formal Account for Reasoning About Uncertain Probabilities in Intelligence Analysis**
Pietro Baroni, University of Brescia, Italy
Federico Cerutti, University of Brescia, Italy
Massimiliano Giacomin, University of Brescia, Italy
Lance Kaplan, DEVCOM Army Research Laboratory, USA
Murat Sensoy, Amazon, Alexa AI, United Kingdom

14:45 **Assessing the Robustness of Intelligence-Driven Reinforcement Learning**
Lorenzo Nodari, University of Brescia, Italy
Federico Cerutti, University of Brescia, Italy

15:00 **PRIVAtE: Passive Radar Interpretability Using Variational Auto Encoders**
Marco Cominelli, University of Brescia, Italy
Paolo Braca, CMRE, Italy
Leonardo Maria Millefiori, NATO STO CMRE, Italy
Lance Kaplan, DEVCOM Army Research Laboratory, USA
Mani B. Srivastava, University of California, USA
Francesco Gringoli, University of Brescia, Italy
Federico Cerutti, University of Brescia, Italy

15:15 **ChatGPT Act as an Intelligence Officer**
Lauro Snidaro, University of Udine, Italy

15:30 **Organizing Structures and Information for Developing AI-Enabled Military Decision-Making Systems**
Salvatore Alessandro Sarcia, ITA Army, Belgium
Giordano Colò, Cy4Gate S.p.A., Italy

15:45 **Cognitive Models to Inform the Design of AI Tools for Intelligence Analysts**
Shaun C Lamb, University of Southampton, United Kingdom
Sarvapali Ramchurn, University of Southampton, United Kingdom
Tim Norman, University of Southampton, United Kingdom
Maire Byrne, Defence Scientific Technology Laboratory, United Kingdom

16:00 - 16:20 *Sala Baracca - Casa dell'Aviatore*
CLOSING AND AWARD CEREMONY