



26 novembre 2015, ore 9.30 - Aula Magna

Workshop on Radar Systems and Electronic Warfare

ore 9.30

APERTURA DEI LAVORI

Prof. Fabio Fortuna, Rettore Università Niccolò Cusano di Roma

ore 9.40

RELAZIONI

Prof. Danilo Orlando

Presentazione dell'attività di ricerca condotta presso l'ateneo in ambito radar

Dott. A. Farina

Radar Adaptivity: Antenna Based Signal Processing Techniques 1/2

ore 10.50

BREAK

ore 11.00

RELAZIONI

Dott. A. Farina

Radar Adaptivity: Antenna Based Signal Processing Techniques 2/2

ore 11.50

DISCUSSIONE

Dott. V. Rossi

The role of the Electronic Warfare in the frame of the Defence

ore 13.20

DISCUSSIONE E SALUTI

Tutorial on

Radar Adaptivity: Antenna Based Signal Processing Techniques

Dr. Alfonso Farina, IEEE Aerospace and Electronic Systems Society (AESS) Distinguished Lecturer

CONTENTS

The beginning of RADAR

Operational needs

Side lobe blanking and cancellation techniques

Adaptive arrays of antennas

Some practical application examples of adaptivity to:

- ground based radar systems
- STAP (Space Time Adaptive Processing) for airborne radar systems
- KB (Knowledge-Based) STAP
- STAP for OTH (Over-The-Horizon) radar systems

Passive Covert Location

Conclusions

L'evento è rivolto sia al mondo accademico che al mondo delle aziende della difesa

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The role of the Electronic Warfare in the frame of the Defence

Dr. Rossi, Elettronica SpA

CONTENTS

1st part: Introduction

- The electromagnetic spectrum;
- Taxonomy;
- EW sensors and “effectors”;

2nd part: Operative Functions of EW

- Interception and detection of the emitter (radar/COMM; RF/IR);
- Measurement of waveform parameters and source localization;
- Classification and Identification of the electromagnetic emitter and its platform;
- Counter actions (passive/active, defensive/offensive);

3rd part: Operational employment of EW assets

- Electronic Support from air and naval platform;
- Defensive Electronic Attack (EA):
 - Air defense from SAM (helo, aircraft);
 - Naval defense from antiship missiles;
- Offensive EA vs Air Defense Systems.

SHORT BIO OF DR. FARINA

Alfonso Farina FREng, FIET, FIEEE, Fellow of EURASIP received the laurea degree in EE, University of Rome (I), 1973. In 1974 he joined Selenia, now Selex ES, where he was Director of the Analysis of Integrated Systems Unit and subsequently of Engineering of Large Business Systems Division. In 2012, he was the Chief Technology Officer of the Company reporting directly to the President. Subsequently, he has been Senior Advisor to CTO. He retired in October 2014. From 1979 to 1985 he was also Professor of Radar Techniques at the University of Naples (I). He has provided innovative technical solutions to detection, signal-data-image processing, tracking and fusion for the main radar systems conceived, designed, and developed in the Company. He has provided leadership in many projects, at international level also, in surveillance for ground and naval applications, in airborne early warning and in imaging radar. He is author of more than 600 peer-reviewed technical publications and of books and monographs (published worldwide), some of them also translated in Russian and Chinese. He received many awards, some of which are: leader of the team that won the 2004 First Prize Award for Innovation Technology of Finmeccanica; International Fellow of the Royal Academy of Engineering, U.K. (2005): the Fellowship was presented to him by HRH Prince Philip, the Duke of Edinburgh; IEEE Dennis J. Picard Medal for Radar Technologies and Applications (2010): “For continuous, innovative, theoretical and practical contributions to radar systems and adaptive signal processing techniques”. He received the IET Technical Achievement Award Medal (2014).

SHORT BIO OF DR. ROSSI

Vittorio Rossi was born in Rome, Italy, in 1949. He received his PhD in Electronics Engineering from the University of Rome in 1975. From January 1977 to March 1985 he was with the Naval Division of “Selenia S.p.A.” (today “Selex Electronic Systems”) as a systems engineer in the field of ship-borne search and fire control radars. He then joined Elettronica S.p.A. where he was appointed ECM systems chief engineer, and was primarily involved in research activity on new and very advanced ECM systems and jamming techniques. His areas of interest covered new passive and active system architectures and relevant enabling technologies, as well as their applications in EW systems for ground, naval and airborne platforms. He has been responsible for the R&D programs concerned with the development of advanced integrated system solutions for in-house, Italian (Ministry of Defense) and overseas customers. As senior EW scientist and invited keynote speaker he took part to major EW symposiums, workshops and conferences in Europe and abroad.