

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II
DOTTORATO DI RICERCA / PHD PROGRAM IN
INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING

Module Title: **Electronic Scan Antennas for Radar Signal Processing Applications**

Lecturers: **Dr. Enzo Carpentieri, Dr. Massimo Rosamilia**

CV: Enzo Carpentieri, graduated in Electronic Engineering at University of Naples “Federico II” in 1983. He worked for many years in one of the most important Italian defense companies. He has authored a number of scientific publications on transmission line transformers, detection of pulse radar signals, and phased array antennas.

CV: Massimo Rosamilia (Member, IEEE) received the B.S. (Hons.) and M.S. degrees in computer engineering from the University of Salerno, Fisciano, Italy, in 2017 and 2019, respectively, and the Ph.D. degree (cum laude) in information technologies and electrical engineering from the University of Naples Federico II, Naples, Italy, in 2023. He is currently an assistant professor (RTDa) with the University of Naples Federico II. His research interests include statistical signal processing with applications to radar detection and estimation problems.

Overview

This course will discuss the applications of Electronic Scanning Antennas in the Radar field and will provide the students with a brief introduction and a review of the main techniques/algorithms that can be applied for target filtering, beamforming, and detection. A lecture on recently developed estimation techniques based on the compressed-sensing framework is also provided. After a theoretical part, the attention will be shifted to some specific examples with emphasis on solutions proposed in practice. At the end of each lecture, students are encouraged to start a discussion on possible alternative techniques or solutions.

Credits: 2

Schedule

Lecture	Date	Time	Topics	Lecturer
1	25/03/2025	14.30-17:30	Beam Forming Techniques & Spectral Estimation Methods for Radar: part I	E. Carpentieri
2	27/03/2025	14.00-17:00	Beam Forming Techniques & Spectral Estimation Methods for Radar: part II	E. Carpentieri

			Practical Issues involving Radar Hardware	
3	02/04/2025	14.00-17:00	Advanced Super-resolution Direction-of-Arrival (DOA) estimation techniques using Compressed-Sensing methodologies.	M. Rosamilia
4	11/04/2025	09.30-11:30	Assessment test	M. Rosamilia

Lessons will be held on Room Seminars in the building 3, first floor - DIETI, Via Claudio, 21- 80125 Napoli

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