



## ELEctromagnetic DIAgnostics Research Center

ELEDIA Research Group at DISI  
University of Trento  
Via Sommarive 9, I-38123 Trento, Italy

E-mail: [andrea.massa@unitn.it](mailto:andrea.massa@unitn.it)  
Web: [www.eledia.ing.unitn.it](http://www.eledia.ing.unitn.it)



### PHD COURSE:

# Scanning Array Technology for Radar and Communications

- Speaker:** Dr. Robert J. Mailloux  
(Air Force Research Laboratory)
- Dates:** 18-19-20 May 2015
- Location:** ICT International Doctoral School, University of Trento
- Duration:** 20 Hours
- Note:** The lessons will be held in English
- Contact:** Prof. Paolo Rocca ([paolo.rocca@unitn.it](mailto:paolo.rocca@unitn.it))



The course is aimed at providing theoretical and applicative results in the design and synthesis of advanced phased array antennas. Focus will be on effective design architectures and synthesis strategies for fixed and adaptive arrays devoted to mobile and satellite communication and radar systems.

Scanning array antennas are the basis for an ever-growing list of applications, from mobile communication and satellite communication to radar systems. The variety and complexity of these systems is such that their design requires detailed knowledge only gained through study and experience.

The course begins with a discussion of relevant array parameters that define antenna patterns, bandwidth, and gain. The second topic introduces the subtleties that limit performance including the electromagnetic interaction of array elements that creates a need to compensate for this effect in pattern synthesis. Array bandwidth considerations, combined with device availability, impose limits on pattern realizability. The final topics include adaptive pattern control and special array architectures for restricted sector scanning and time delayed subarrays.

This course will provide the student with the background to do research in any of these areas, and to synthesize and design antenna arrays for many applications.

#### • About the Speaker

**Dr. Mailloux** is a retired Senior Scientist at the Sensors Directorate, Air Force Research Laboratory, and has served as the Chief of the Antennas and Components Division, Rome Laboratory and as a physicist at the Air Force Cambridge Research Laboratory. He is the author or co-author of numerous journal articles, book chapters, 13 patents and the books Phased Array Handbook, Electronically Scanned Arrays and is co-editor of the book History of Wireless. He is a Life Fellow of the IEEE and now consults in the area of periodic structures and antenna arrays.

Dr. Mailloux was President of the Antennas and Propagation Society in 1983, and in 1992 he received the IEEE Harry Diamond Memorial Award. He received two IEEE AP-S Honorable Mention Best Paper Awards, the IEEE Third Millennium Medal and the AP-S Distinguished Technical Achievement Award. He is a member of Tau Beta Pi, Eta Kappa Nu, Sigma Xi, and Commission B of the International Scientific Radio Union. He has received four Air Force Research Laboratory "Best Paper" awards, the "Engineer of the Year" award, and is an AFRL Fellow. He has been a distinguished Lecturer for the Antenna and Propagation Society and is currently chairman of the AP-S / IEEE Press Liaison Committee.