Tecniche di Ottimizzazione Evolutive e Applicazioni a Problemi di Elettromagnetismo

Prof. Andrea Massa

In the last decades, thanks to the growing of the available computational capabilities given by modern personal computers, optimization techniques based on *Evolutionary Algorithms* (EAs) have received great attention and they have been effectively applied to several problems in engineering electromagnetics.
EAs are based on stochastic iterative procedures which consider a pool of trial solutions at each iteration thus enabling an efficient sampling of the solution space as compared to single-agent stochastic optimization algorithms. The pool of solutions iteratively updates through the use of proper operators/rules until a convergence criterion is reached.
In this talk, a review of EA-based approaches for engineering electromagnetics is presented. Starting from the theoretical framework of EAs and the state-of-the-art, some meaningful examples of EA-based approaches for inverse scattering are reported to show the capabilities, but also current limitations, of these techniques. Finally, some indications on future trends of EA-based inverse scattering techniques are envisaged.

Andrea Massa **is Full Professor of Electromagnetic Fields at the University of Trento, where he currently teaches electromagnetic fields, inverse scattering techniques, antennas and wireless communications, and optimization techniques. Prof. Massa is also the director of the ELEDIALab at the University of Trento and Deputy Dean of the Faculty of Engineering. He is a member of the IEEE Society, of the PIERS Technical Committee, of the Inter-University Research Center for Interactions Between Electromagnetic Fields and Biological Systems (ICEmB), and Italian representative in the general assembly of the European Microwave Association (EuMA). His research work since 1992 has been principally on electromagnetic inverse scattering, microwave imaging, optimization techniques, wave propagation in presence of nonlinear media, wireless communications and applications of electromagnetic fields to telecommunications, medicine and biology.**

Il Corso, destinato a studenti, dottorandi e a tutti gli interessati, si terrà nei giorni

- **8 giugno (dalle ore 10:00 alle ore 12:00)**
- **9 giugno (dalle ore 9:00 alle ore 12:00)**
- **10 giugno (dalle ore 9:00 alle ore 12:00)**

presso i locali della Facoltà di Ingegneria. Per ricevere un programma dettagliato o qualsiasi altra informazione è possibile rivolgersi al Prof. Tommaso Isernia (tommaso.isernia@unirc.it) oppure all'Ing. Andrea F. Morabito (andrea.morabito@unirc.it).