**Advanced impedance matching and impedance analysis for antenna applications**

list of presenters with email addresses and affiliations:

Name: Jussi Rahola

Affiliation: Optenni Ltd

Postal address: P.O. Box 42, 02211 Espoo, FINLAND

E-mail address: jussi.rahola@optenni.com

Phone number: +358 452658245

For many antenna applications, the impedance matching can be done much faster by designing matching circuits than by modifying the antenna geometry. This course starts by reviewing the basics of impedance matching using inductors, capacitors and transmission lines. Two definitions of waves in microwave engineering are reviewed: the traveling waves for the analysis of physical wave amplitudes and the power waves for the analysis of the propagation of power. Practical issues for the design of efficient and wideband matching circuits are discussed, including component losses, tolerances and simultaneous multiport matching. In addition, the concept of bandwidth potential and antenna Q estimation are presented for the estimation of the obtainable bandwidth of antennas through matching circuits. Finally, the concept of electromagnetic isolation is presented for studying the worst-case isolation in two-antenna systems.