

**Seminar on  
“RADAR TECHNOLOGY AND WEATHER OBSERVATION”  
PROGRAM AND TIMETABLE  
Prof. Michele D’Amico**

**OBJECTIVES**

This seminar (in two parts) addresses the fundamentals of radar observation of the atmosphere. On day one, after a brief introduction on general radar theory, Doppler techniques are illustrated. Day two is focused on polarimetric techniques and rain rate estimation. Some on-going activities related to antenna design, currently undertaken within DEI, POLIMI will also be discussed.

**PART 1 (Wednesday November 30<sup>th</sup>, 2011)**

- Introduction to Radar Meteorology: Targets, scattering and absorption cross sections, the monostatic radar equation for single, surface and volumetric targets, conventional Radar measurables: the reflectivity Z.
- Doppler techniques: Doppler radar theory for moving targets; Doppler quantities: momenta and spectrum; Doppler signature of volumetric targets; Applications: estimation of windspeed, clutter cancelling.

**PART 2 (Thursday December 1<sup>st</sup>, Friday 2<sup>nd</sup>, 2011)**

- Polarimetric Techniques: Polarimetric quantities: Zdr, LDR, Kdp, etc.; Use of polarimetric measurables (Zdr, LDR, Kdp, etc.) in radar meteorology.
- Rain rate estimation; impairments and artifacts: propagation effects, clutter.