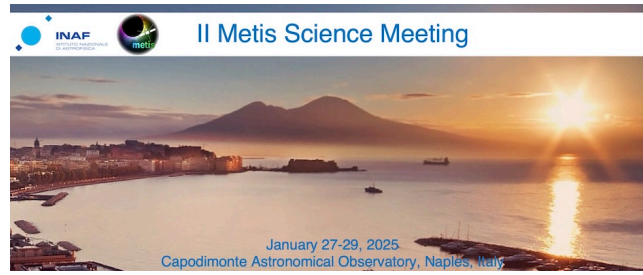


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Italian Radio facilities for Solar and Heliospheric Physics

Radio observations can probe and monitor the vertical structure and physical conditions of different layers of the solar atmosphere as a function of the observing frequency. Covering the entire radio range from millimeter to decameter wavelengths, it is possible to explore emission from the temperature minimum (at sub-millimeter waves) to the low corona (at meter waves) with the advantage that quiet Sun radio emission originates from thermal bremsstrahlung in local thermodynamic equilibrium. Focusing on very specific layers as for example the upper chromosphere and transition region through dedicated K-band observations (15-25 GHz), complex magnetic processes can be unveiled where the core of energetic processes occur (e.g. flaring active regions). We present a comprehensive picture and prospects of the growing network of radio facilities dedicated to solar radio observations focusing on the national plans about single-dish radio imaging and solar radio monitoring through dynamical spectroscopy. The link and integration of radio information with solar observations in other domains, including space-based facilities, can be very important (1) to constrain solar atmospheric models; (2) to characterise the flux density, spectral properties and long-term evolution of dynamical features (active regions, coronal holes, loop systems, streamers and the coronal plateau); (3) to predict powerful flares through the detection of peculiar spectral variations in the active regions, as a valuable forecasting probe for the Space Weather hazard network.

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