
Status of the SKA and prospects for interstellar medium studies

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Abstract

Green light has been given recently for the construction of the Square Kilometer Array, SKA, the world's largest radio telescope arrays. This facility, deployed on two continents, is an extraordinary human and technological endeavour. The scientific topics that will be explored with the SKA is large in scope and its potential for discoveries is important for almost any field of astrophysics. In this presentation I will present the status of the project and the involvement of France. But mostly I will present the interest for interstellar medium studies, in the Milky Way and in nearby galaxies. On that matter, several new grounds will be explored with the SKA : high-resolution HI allowing to study to turbulent cascade and the WNM-CNM phase transition to uncharted small scales in the Milky Way and at energy injection scales in nearby galaxies, RM synthesis observations following up on the spectacular discoveries of LOFAR of the diffuse ISM magneto-ionic properties, dust emission from very large dust grains allowing to explore the growth of solids in proto-planetary disks, rich complex organic chemistry with the COMs emission lines, mapping of the CNM physical properties using radio recombination lines, study of star forming regions of our Galaxy using Masers and Free-Free emission, study of the cosmic rays and the Galactic magnetic field using the Galactic synchrotron emission.

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