Cosmic rays & their interstellar medium environment CRISM-2011

dimanche 26 juin 2011 - vendredi 1 juillet 2011

Montpellier, France

Programme Scientifique

The four main sessions of the workshop are:
Cosmic ray sources: high energy cosmic rays and molecular clouds.

Recent observations of the cosmic ray sources at high energy (gamma and X-ray) especially thanks to the work of Tcherenkov telescopes (HESS, MAGIC and Veritas) and Fermi. Survey of radio observations of supernova remnant shells. Probes of the interaction of supernova remnants with molecular clouds by CO surveys and OH masers measurements.

Last developments in theory of particle acceleration in supernova remnants and massive star forming regions. Cosmic ray escape from the sources and their interaction with molecular clouds.

Connection between pre-supernova phases and particle acceleration performances and the production of the all cosmic ray spectrum.
Survey of the properties of the interstellar medium:

State-of-art properties of the interstellar medium: the magnetic field structure and the fraction of the magnetic energy in turbulent motions and their relevance for cosmic ray transport.

Progress in numerical modelling of the turbulent interstellar medium.

Interplay between cosmic rays, magnetic fields and the gas component. Cosmic ray magnetic dynamo
Cosmic ray propagation and interaction in the interstellar medium

Recent direct observations collected by satellites and balloon flights.

Models of cosmic rays propagation: High energy TeV-PeV particle propagation.
Low energy (GeV) particle propagation.
Ionisation of the interstellar medium: Effect of cosmic ray ionisation in the interstellar medium: Production of ions. Effects on the gravitational collapse of molecular clouds as well as on planetary discs. Possible effect of cosmic rays on Earth climate.