Interactions between CRs and MCs in the vicinity of Supernova remnants

Supernovae are incredibly energetic events which drive the dynamic state of the interstellar medium and accelerate cosmic rays up to energies of a few PeV. I present multi-wavelength observations constraining the shocks, chemistry, dust grain processing, and magnetic fields in a large sample of supernova remnants interacting with dense clouds. These are among the most luminous Galactic sources detected by the Fermi Gamma-Ray Space Telescope. Surprisingly, spectral breaks are seen between GeV and TeV energies. Radio spectral breaks have also been detected for a few remnants, providing clear evidence that supernovae are a significant source of hadronic cosmic rays in the Galaxy. Resolving the origin of these spectral breaks will allow the physics of cosmic ray acceleration and diffusion to be probed.