

# Gamma-ray Astronomy and the Origins of Galactic Cosmic Rays

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The all-particle cosmic ray spectrum exhibits a spectral break at around 3 PeV known colloquially as the “knee”, thought to correspond to a transition between galactic and extragalactic origins. Recently evidence has emerged for a variety of different source classes being capable of accelerating particles to PeV energies. This evidence is provided by gamma-ray astronomy, conducted using ground-based telescopes and particle detectors. The detection techniques used in gamma-ray astronomy rely in part on simulations of particle interactions, constrained by measurements at accelerator facilities. In this talk, I will introduce gamma-ray astronomy and highlight recent results in studying galactic particle accelerators, including distinguishing electrons and positrons from hadronic cosmic rays, and constraining the particle transport processes.