

Gamma-ray emission of pulsars: Status and multi-wavelength context

Gottfried Kanbach

Max-Planck-Institut für extraterrestrische Physik, Postfach 1312, 85741 Garching, Germany

ABSTRACT: High-energy radiation, which is generated in single-particle processes inside or near to a pulsar's magnetosphere, provides the most direct insight into the physical and geometrical conditions surrounding a rotating, magnetized neutron star. Particle trajectories are tightly aligned with the local magnetic fields and the widely accepted emission processes of accelerated, highly relativistic electrons (synchrotron and curvature radiation, inverse Compton scattering) lead to photons that are also emitted nearly tangentially to the local fields. The emission pattern observable far from the pulsar on the celestial sphere is thus a projection of the source intensities and their beaming geometry. Measurements of timing (light-curves), spectra, and polarization represent cuts through these emission patterns. We will discuss the status of presently known high-energy pulsars and present the multi-wavelength context in which the dominant MeV-GeV luminosity is embedded.