Discoveries by the Fermi Gamma Ray Space Telescope

Neil Gehrels
NASA-GSFC

Fermi is a large space gamma-ray mission developed by NASA and the DOE with major contributions from France, Germany, Italy, Japan and Sweden. It was launched in June 2008 and has been performing flawlessly since then. The main instrument is the Large Area Telescope (LAT) operating in the 20 MeV to 300 GeV range and a smaller monitor instrument is the Gamma-ray Burst Monitor (GBM) operating in the 8 keV to 40 MeV range. New findings are occurring every week. Some of the key discoveries are

- Discovery of many new gamma-ray pulsars, including gamma-ray only and milli-second pulsars.
- Detection of high energy gamma-ray emission from globular clusters, most likely due to summed emission from msec pulsars.
- Discovery of delayed and extended high energy gamma-ray emission from short and long gamma-ray busts.
- Detection of ~250 gamma-ray bursts per year with the GBM instrument
- Most accurate measurement of the cosmic ray electron spectrum between 30 GeV and 1 TeV, showing some excess above the conventional diffusion model

The talk will present the new discoveries and their implications.