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Extending Fermi LAT discoveries: Compton-Pair Production Space Telescope (ComPair) for MeV Gamma-ray Astronomy

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The gamma-ray energy range from a few hundred keV to a few hundred MeV has remained largely unexplored, mainly due to the challenging nature of the measurements, since the pioneering, but limited, observations by COMPTEL on the Compton Gamma-Ray Observatory (1991-2000). This energy range is a transition region between thermal and nonthermal processes, and accurate measurements are critical for answering a broad range of astrophysical questions. We are developing a MIDEX-scale wide-aperture discovery mission, ComPair (Compton-Pair Production Space Telescope), to investigate the energy range from 200 keV to > 500 MeV with high energy and angular resolution and with sensitivity approaching a factor of 100 better than COMPTEL. This instrument will be equally capable to detect both Compton-scattering events at lower energy and pair-production events at higher energy. ComPair will build on the heritage of successful space missions including Fermi LAT, AGILE, AMS and PAMELA, and will utilize well-developed space-qualified detector technologies including Si-strip and CdZnTe-strip detectors, heavy inorganic scintillators, and plastic scintillators.

Collaboration

– not specified –

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