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Galactic scientific results from the first 6 months of the Fermi/LAT mission

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The Large Area Telescope (LAT), one of two instruments on the Fermi Gamma-Ray Space Telescope (formerly GLAST, launched June 11, 2008) is a pair conversion detector designed to study the gamma-ray sky in the energy range 20 MeV to $\lesssim 300$ GeV. The greatly improved sensitivity of the LAT compared with its predecessor experiment, EGRET on the Compton Gamma-Ray Observatory, coupled with the uniform and deep sky coverage, and lack of consumables, provides a unique capability for studying the gamma-ray Universe. The Galaxy is replete with gamma-ray sources: pulsars, X-ray binaries, supernova remnants, and molecular clouds to name a few. The propagation of cosmic rays in the Galaxy produces diffuse gamma-ray emission through interactions with the interstellar gas and radiation fields, and is the bright background against which the sources are detected. Diffuse gamma-ray emission is also expected from similar processes in nearby galaxies, such as the Large Magellanic Cloud (which was detected by EGRET), and even from within the solar system itself. The LAT has detected many Galactic gamma-ray sources and the diffuse emissions of the Milky Way and some Local Group galaxies with unprecedented sensitivity and resolution. I will give an overview of the results obtained on these topics for the first 6 months of the Fermi/LAT mission.

¹on behalf of the Fermi/LAT collaboration