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Interstellar gamma-ray emission observed by the Fermi Large Area Telescope as a cosmic-ray tracer[1] ELLIOTT BLOOM, LUIGI TIBALDO, KIPAC-SLAC, Stanford University, FERMI-LAT COLLABORATION[2] — The Large Area Telescope (LAT) aboard the Fermi Gamma-ray Space Telescope continuously surveys the high-energy gamma-ray sky in the energy band from 20 MeV to more than 300 GeV. The majority of the photons detected by the LAT are of interstellar origin, produced by interactions of high-energy cosmic rays with gas and low-energy radiation fields. This interstellar gamma-ray emission is a unique tracer of cosmic rays outside the solar system where direct measurements are not possible. I will present the most important results concerning interstellar emission from more than four years of LAT observations. LAT data are granting us access to a wealth of new information on the cosmic-ray environment in the local interstellar medium, in nearby regions of massive-star formation, throughout the Milky Way and up to external galaxies and the intergalactic space. I will discuss how these results are improving our understanding of the century-long puzzle of cosmic-ray origin and propagation.

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