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The Silicon Strip Tracker of the Fermi Large Area Telescope

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The Large Area Telescope (LAT) is the main instrument onboard the Fermi Gamma-ray Space Telescope, an orbital observatory launched in low-Earth orbit on June 11 2008 to survey the high-energy gamma-ray sky. The LAT tracker/converter serves the twofold purpose of converting the incoming gamma-ray into an electron-positron pair and tracking the latter in order to measure the original photon direction. With its 73 square meters of single-sided silicon-strip detectors, read out by some 900,000 independent electronics channel, it is the largest solid-state tracker ever built for a space application. The tracker system operates on 160 W of conditioned power while achieving a single-plane hit efficiency in excess of 99% and a noise occupancy at the level of 1 channel per million.

We describe the basic tracker design and the performance throughout the first three years of operation in orbit.

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