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Precursors in gamma-ray bursts detected by the Fermi-LAT and GBM SYLVIA ZHU, Univ of Maryland-College Park, FERMI LARGE AREA TELESCOPE COLLABORATION — Many aspects of gamma-ray bursts (GRBs) remain mysterious more than 40 years after their initial discovery. However, observations of GRBs by the Fermi Large Area Telescope (LAT) and Gamma-ray Burst Monitor (GBM) have uncovered new information about the observed properties and the underlying physics. In a small minority (roughly 5-20%), a dim, temporally distinct precursor peak occurs before the brightest part of the prompt emission in the keV-MeV range. The origin of precursors is still unknown, and studies of precursors can probe the formation of the GRB central engine and/or the nature of the jets that produce the emission. We present a systematic search for precursor emission in LAT and GBM data, and the temporal and spectral properties and energetics of the population of GRBs with precursors.

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