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A Pipeline for Detecting Gamma-Ray Bursts in INTEGRAL SPI-ACS Data

Gamma-ray bursts (GRBs), especially weak or short-duration events, are essential probes of high-energy astrophysical processes. The Anti-Coincidence Shield of the INTEGRAL/SPI instrument (SPI-ACS) provided continuous high-energy light curves well suited for detecting such transients. We developed a pipeline to search for GRBs in these data by adaptively estimating the background and identifying significant excesses using a multi-threshold scheme. Validation on archival SPI-ACS data showed that the pipeline recovered all known GRBs in the test sample and identified additional candidates, later confirmed as real GRBs via NASA's GCN notices. With minimal modification, the pipeline was also successfully adapted for Fermi/GBM data, demonstrating its versatility. These results confirm the pipeline's effectiveness in expanding GRB catalogs and highlight its potential for future archival studies and real-time transient discovery.

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