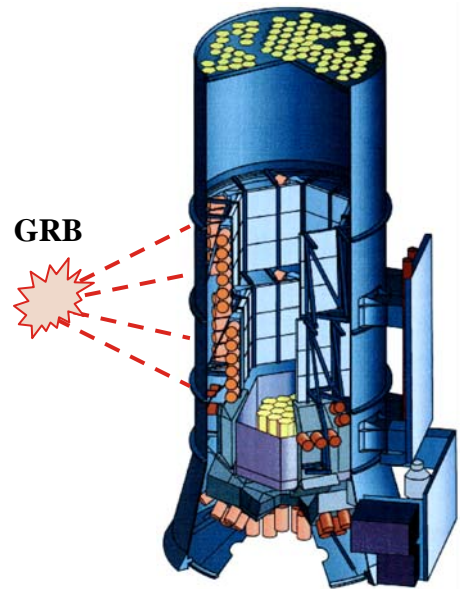


The anticoincidence shield (ACS) of the spectrometer onboard INTEGRAL (SPI) is operated as a quasi omnidirectional gamma-ray burst (GRB) detector above ~ 75 keV. Since the start of the mission in October 2002 more than 300 GRB candidates have been detected. 50% of these could be confirmed and partly localized by the γ -ray instruments included in the 3rd Interplanetary Network. The previously known bimodality of durations is detected in the sample. A prominent population of short burst candidates (< 200 ms) is found, which however is contaminated by events from cosmic-ray nuclei interactions in the detectors.

SPI-ACS as GRB detector:

The SPI-ACS consists of 91 BGO crystals and can detect GRBs nearly omnidirectional above ~ 75 keV. The upper end of the energy range is somewhat uncertain, but > 10 MeV. The overall detector count rate is recorded in 50 ms time bins. Software was developed to search for excesses in the time profile and to alert the interested community. SPI-ACS measurements do not provide spatial information but help to localize bursts via triangulation, being an important member of the 3rd Interplanetary Network (IPN).

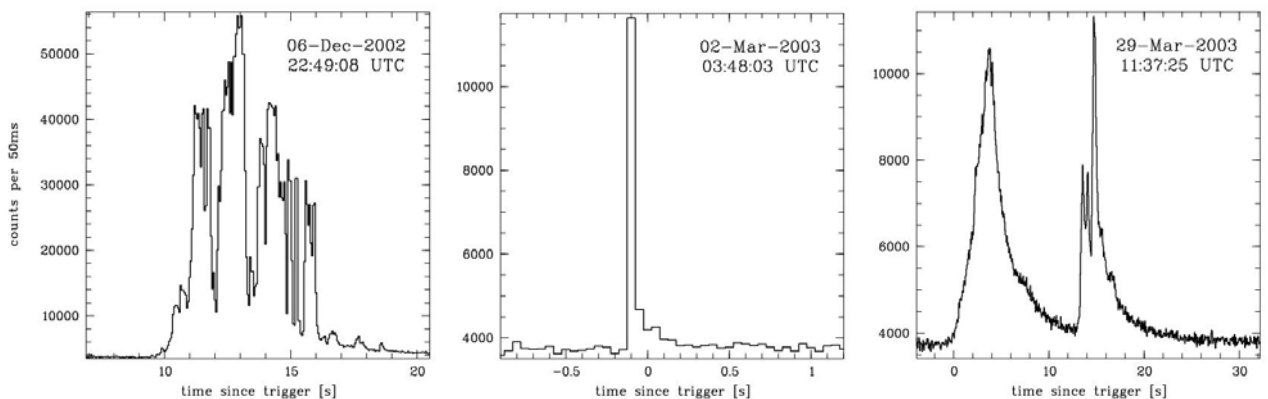


GRB sample:

Until August 2004 more than 300 GRB candidates have been detected (see bottom for examples). Nearly 50% of these candidates were also observed and confirmed by other IPN instruments. The sample exhibits the previously found bimodality in durations (peaks at 0.3s \sim 30s) but shows an unusually prominent population of short (< 0.2 s) GRBs.

Origin of the short event population:

A significant fraction of the short events (e.g. event from March 3 2003) is accompanied by simultaneous saturation of one or several SPI detectors. Therefore, they are probably caused by a very energetic cosmic-ray particle, which hits the BGO. This causes a so-called afterglow of several milliseconds in the crystal and leads to a repetitive event trigger. The particle is stopped in the SPI Ge-detectors and deposits enough energy to saturate the detectors (Rau et al. 2004).



Reference: Rau A., von Kienlin A., Hurley K. & Lichti G.G. 2004, in Proc. of the 5th Integral Workshop, Munich