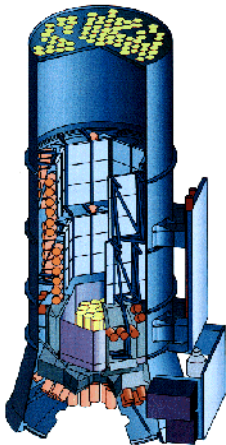


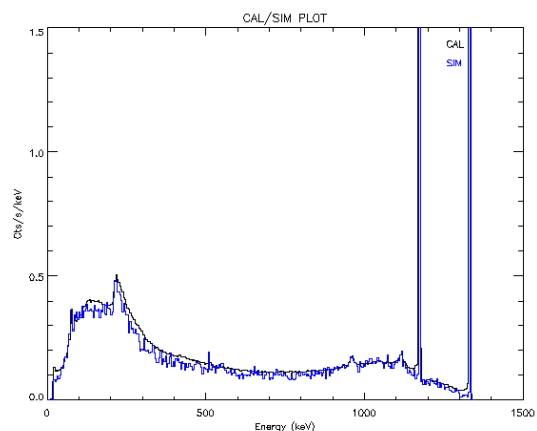
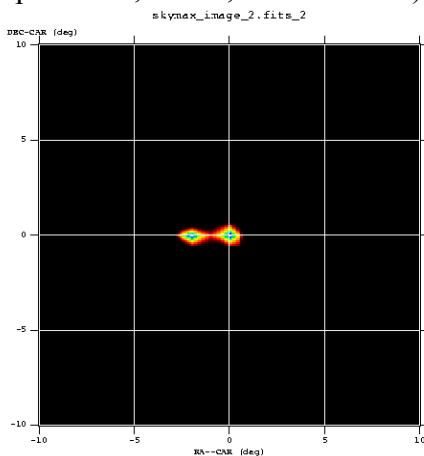


Spectrometer SPI on INTEGRAL



The flight model of the SPI spectrometer (left, schematic view) had been calibrated at the beam facility in Bruyeres-Le-Chatel with photons from radioactive sources and nuclear reactions (right), before its integration onto the INTEGRAL spacecraft platform at ESTEC (center).

The ESA Mission INTEGRAL (INTERNational Gamma Ray Astrophysics Laboratory) is our next step in low-energy gamma-ray astronomy (i.e. 0.1-10 MeV). It will be launched on Oct 17, 2002, from Baikonur with a Russian 'Proton' rocket into an elliptical orbit with 72 hours period and initial apogee of 153000 km and perigee of 10000 km at an inclination of 51.6°. Nominal mission lifetime is 2 years (with extension up to 3 years). INTEGRAL's main instruments are the spectrometer SPI and the imager IBIS, complementing each other: SPI is optimized for high-resolution gamma-ray line spectroscopy (energy resolution ~2.5 keV FWHM at 1.3 MeV), while IBIS is optimized for fine imaging (angular resolution 12' FWHM). The MPE is involved in SPI (at Co-PI level) and the INTEGRAL Science Data Center (ISDC) Geneva (at Co-I level). SPI science objectives are focussed on the study of gamma-ray lines from radioactive isotopes. A wealth of new information is expected for lines from ^{26}Al , ^{60}Fe , ^{44}Ti , ^{22}Na and 511 keV/annihilation; line profiles will help to reveal new details on sources of nucleosynthesis (supernovae, novae, massive stars).



The prelaunch calibrations confirm the instrument response: measured energy spectra can be adequately reproduced with simulations of the detector characteristics (right, for a ^{60}Co source with photons at 1173 and 1332 keV energy), nearby sources can be well separated with MaxEnt imaging using the simulated response (left, for two ^{60}Co sources viewed at 2° separation)

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