The Miniature X- and Gamma-Ray Sensor (MXGS)

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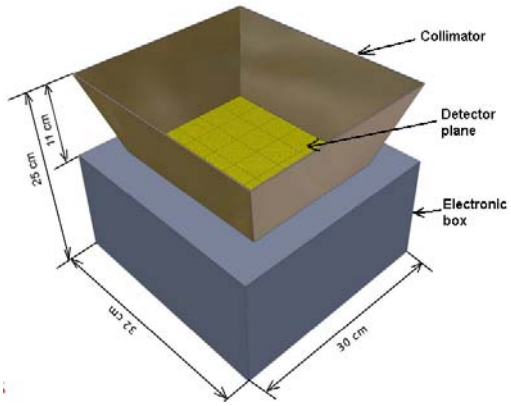
The Miniature X- and Gamma-Ray Sensor (MXGS) on ASIM is designed to detect bremsstrahlung from Terrestrial Gamma Bursts (TGFs) and from lightning-induced electron precipitation (LEP). The MXGS will cover an energy range from 10 keV – 500 keV.
A schematic drawing of the MXGS layout is shown below. The X- and γ- ray detection will be provided by a 480 cm^2 (minimum size) detector plane consisting of CZT semi-conductor detectors. Due to their high mean atomic number these detectors have a large stopping efficiency for X- and γ - rays up to a few hundred keV. A further advantage is that they can be operated at or close to room temperature. Combined with a fast ASIC read-out system the MXGS will give the time history and spectra over the course of the expected TGFs lifetime of 1-5 ms. The read-out system will also provide an event trigger to flag observations of bursts and to trigger the optical MMIA cameras. The detector plane is protected against the background radiation by a passive shield and the FOV is defined by a hopper shaped collimator.
The presentation will discuss the scientific and technical requirements underlying the MXGS design.



Conceptual sketch of the MXGS.