

Terrestrial Gamma Ray Flash Imaging

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The purpose of this poster is to describe the ASIM MXGS imaging capabilities for TGF detection and location. One of the key elements of the imaging design is the assumption about the source size: point source or extended source. Detailed numerical simulations of TGFs with ignition layers at different altitudes have been done. All the models considered suggest that the TGF seen from the ISS is an extended source. The estimation of the TGF size is not trivial and is model dependent. Therefore the mask pattern and pixel size have been designed as a compromise to give the maximum angular resolution consistent with retaining good imaging capability for the extended sources, including minimising ghost images. The mask pattern is encoded in a Tungsten plate, 1 mm thickness, embedded in a mechanical grid made of aluminium alloy that guarantees pixel position and stability. The Aluminium structure has been minimized in order to preserve mask transparency in open pixels above 20 KeV. An Aluminium alloy collimator together with a passive graded shield, designed to stop both cosmic X-ray background photons and soft Gamma rays from radioactive decays in surrounding materials, complete the MXGS imaging system definition.

