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Initial STIX Coarse Flare Locations

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STIX on board Solar Orbiter uses an indirect imaging system to measure flare location, size and morphology. Pairs of tungsten grids create Moiré fringes on its coarsely pixelated CdTe detectors. Images are then reconstructed on the ground, using sophisticated imaging algorithms, after the full pixel has been downloaded. STIX therefore uses a dedicated sub-collimator to estimate a rough (within a few arcminutes), but unambiguous, flare location on board in near real time. The Coarse Flare Locator (CFL) consists of a single grid with a specific pattern which selectively illuminates pixels of a dedicated detector based on the source location. The correlation between the counts in the pixels of this detector and a look up table of pre-calculated expectations allows the location to be estimated promptly, within the constraints of on board processing. Using the downloaded measured counts in each pixel the coarse flare location can also be reconstructed on the ground. This allows for more sophisticated algorithms which require greater computational power than is available on board; greater flexibility as to which time and energy intervals are combined; and more careful background subtraction. The first estimates of STIX flare locations calculated using the STIX Ground Processing Software (GSW) from data taken during the first year of STIX operations are presented here. Comparisons are made to the expected active region and source locations, using data from several other instruments. Pending a successful flight software update the on board location estimates will also be analysed and compared with expectations.

Student poster?

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