



Contribution ID: 52

Type: **not specified**

Imaging Spectroscopy of Extended Hard X-ray Sources

Thursday, 8 July 2021 17:00 (35 minutes)

We have used improved imaging spectroscopy techniques to re-analyze the nine events in early 2002 for which Schmahl and Hurford (2002, 2003) found evidence for an extended “halo” X-ray source around a single compact source. They used two different innovative techniques to show that these relatively simple events featured an extended source in the 12-25 keV energy range with a FWHM width as large as 40 arcsec containing up to 25% of the total emission. We used the following new and improved tools to better characterize real extended sources and to eliminate false ones: (1) establish the relative sensitivity of the different detector segments averaged over both a full 4 s rotation and over the short (ms) time scales of the rapid modulation, (2) account for pulse pile-up that affects each detector output differently depending on its sensitivity, (3) use the visibility forward-fit (Vis_FwdFit) image reconstruction algorithm to obtain spectra of a combination of individual sources with circular and elliptical Gaussian shapes. Analysis of the nine events using these new techniques shows that the claimed halo sources are most probably not real and that other examples of extended sources must be re-examined using these new analysis tools.

Schmahl, E. J., & Hurford, G. J. 2002, *Solar Physics*, 210, 273.

Schmahl, E. J., & Hurford, G. J. 2003, *Advances in Space Research*, 32, 2477.

Email

brian.r.dennis@nasa.gov

Primary author: DENNIS, Brian (NASA)

Co-author: Ms TOLBERT, Anne

Presenter: DENNIS, Brian (NASA)

Session Classification: Working Group 1: Flare thermal response

Track Classification: Working Group 1: Flare thermal response