

MEM Imaging for RHESSI

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Abstract. We have mapped flares in the hard X-ray domain (25-300 keV) using visibilities constructed from Ramaty High Energy Solar Spectroscopic Imager (RHESSI) modulation profiles. The imaging algorithm used to map the visibilities is a new maximum entropy method called MEM_NJIT. We have imaged approximately 30 flares from the RHESSI database and have compared MEM_NJIT results with other imaging programs that have proven to be reliable for RHESSI data, namely Clean and Pixon. Tests that were conducted included comparison of MEM_NJIT component fluxes and positions with Clean and Pixon measurements. MEM_NJIT produced maps that were similar to Pixon components in size and smaller than Clean components. Although a good agreement exists between MEM_NJIT and Clean footpoint fluxes, the correlation is not as tight as it is with MEM_NJIT and Pixon component fluxes, especially at low fluxes. In all cases, MEM_NJIT is faster than Clean and significantly faster than Pixon.



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