

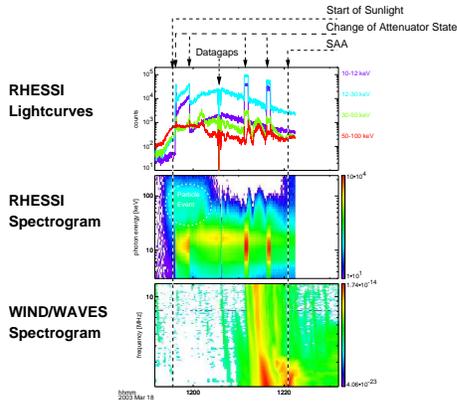
HXR Footpoint Motions during the March 18, 2003 X-class Flare

M. D. Fivian, S. Krucker, R. P. Lin – Space Sciences Laboratory, UC Berkeley

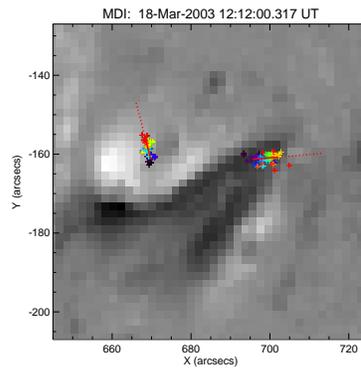
Hard X-ray observations of the GOES X1.5 flare on March 18, 2003, taken by the Reuven Ramaty High Energy Solar Spectroscopic Imager (RHESSI) are presented. This long duration event (GOES duration slightly longer than 1 hour) occurred at S15W46. Enhanced hard X-ray emission (> 30 keV) is seen for more than 25 minutes with the strongest HXR bursts detected almost 10 minutes after the peak emission seen in GOES soft X-ray.

In a reconnection model of Solar flares, the motion of the footpoints and the magnetic field along the footpoints suppose to be correlated with the hard X-ray flux at the footpoints produced by the non-thermal electrons.

In order to understand this, the HXR sources and their motions are investigated and compared to TRACE (171 Å) EUV images and MDI magnetograms.



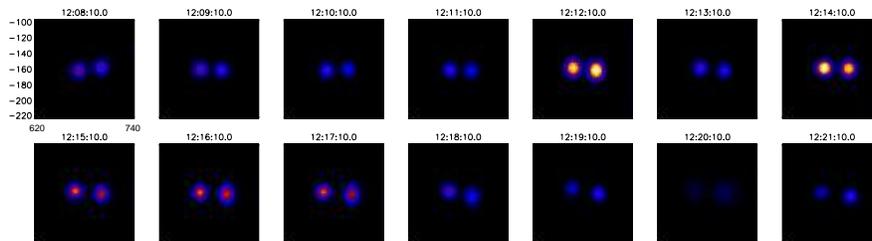
Overlay of Measured Footpoint Motion and MDI Magnetogram



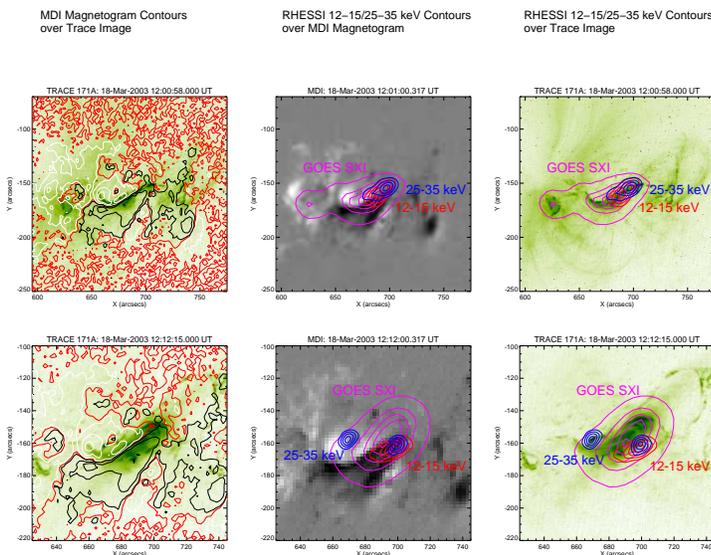
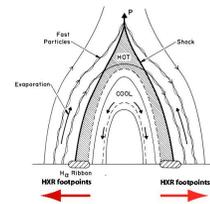
Preliminary Results

- Long duration, intense flare (X-class) with two clearly separated footpoints.
- Data gaps and shutter motions (pileup) induce noise in source position.
- Approximately constant motion of 15 km/s during 13 min. (total of 16 arcsec)
- Sheared magnetic loop configuration.
- Footpoints seem to move "away" from apparent neutral line.
- No obvious correlation with X-ray flux. (possible correlation may be hidden in noise)

Forward-Fitted Model of Hard X-Ray Footpoint Sources



Schematics of Reconnection Model



Correlation between hard X-rays and Footpoint Motion

