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## STEREO observations of the 7 Nov 2013 SEP event - an event inside a magnetic loop

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The Solar Electron and Proton Telescope (SEPT) carried on board both of the STEREO spacecraft provides four viewing directions to measure energetic electron and ion anisotropies. Two sectors cover the direction of the nominal magnetic field spiral in the ecliptic, with one looking towards the Sun and the other away from the Sun (Anti-Sun). The other two telescopes view towards north and south, i.e. perpendicular to the ecliptic plane.

On 7 Nov 2013 both STEREO spacecraft detected the same solar energetic particle (SEP) event with nearly simultaneous energetic electron onsets. The event shows strong anisotropy at both positions. However, while the first arriving particles are detected in the SUN telescope by STEREO A as expected for SEP events, STEREO B detects the first arriving particles in the NORTH telescope with a strong bi-directional particle distribution along the north/south direction.

There are two main ideas explaining bi-directionality: i) A particle beam which is mirrored at a magnetically closed structure or turbulence or ii) two incident beams streaming towards each other. The latter idea may imply two separate sources.

In this work we will show that STEREO B was embedded in a magnetic flux rope with both loop legs still connected to the Sun during the SEP event. We investigate in-situ plasma, magnetic field and energetic particle observations to sketch the special magnetic field topology comprising STEREO B.

By combining in-situ with remote sensing and radio observations we can show that the most likely explanation for the bi-directional electron distribution at STEREO B is a SEP injection into both loop legs of the magnetic cloud.

### Collaboration

– not specified –

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