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Multi-spacecraft observations of heavy-ion solar energetic particles

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Solar Energetic Particles (SEPs) released during flares and coronal mass ejections can be detected by spacecraft widely separated in longitude. The mechanism by which this transport across the magnetic field takes place remains unclear.

Studies of SEP events simultaneously detected by multiple spacecraft have mostly focussed on electron and proton data. Here we consider multi-spacecraft events observed by the LET instrument on STEREO A and B, and by SIS on board ACE, located near Earth, and analyse the properties of heavy ion SEPs. We study the intensity time profiles and spectra, and the time variations of heavy ion ratios. We verify how these measurements depend on the relative location between the magnetic footpoint of the spacecraft and the associated solar eruptive events. We discuss how the results provide information on possible mechanisms for particle cross field transport, including drift processes.

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