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Measurements

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STEREO observations of widespread SEP events

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With the end of 2009 commencing solar activity closed the prolonged solar minimum of solar cycle 23. The meanwhile well-separated two STEREO spacecraft in combination with observatories located at L1 provide a unique platform to investigate the longitudinal spread of energetic particles at 1 AU. In this presentation two examples are given, of which one, the Jan. 17, 2010 event, was characterized by an electron and ion distribution of more than 100 degree at all longitudes. Unexpected large time delays of one hour between the flare and electron onsets at the spacecraft as well as a lack of anisotropies and velocity dispersion suggests together with numerical simulation that perpendicular diffusion plays a major role in understanding the observed particle properties. The second example, the event on May 5, 2009 was not observed at all three spacecraft: the intensities were strongest at STEREO A, weaker at Earth and not observed by STEREO B. In contrast to the multi-point radio measurements together with EUVI observations by STEREO B, which suggest a poor connection to the particle source, in-situ particle time-intensity profiles and anisotropies resemble a well-connected source, indicating an extremely asymmetric particle source at the Sun.