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Solar Energetic Particles: new multi-spacecraft views with Solar Orbiter and Parker Solar Probe

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Solar Energetic Particles (SEPs) can be detected in the heliosphere following their acceleration during solar flares and coronal mass ejections (CMEs). They are a key component of the space radiation environment, affecting space weather. SEP observables, including intensity profiles, spectra, composition and anisotropies, carry signatures of the energisation processes and of propagation effects experienced while the particles travel through the interplanetary magnetic field.

The launch of Solar Orbiter (SolO) and Parker Solar Probe (PSP) opened new possibilities in the study of SEPs: using their in-situ measurements, combined with those of other spacecraft such as STEREO A, SOHO and planetary missions, SEP data at several (e.g. 5 or more) locations in the heliosphere are available for a large number of events for the first time. These include events where SolO or PSP are close to the Sun, thus close to the acceleration region and minimising propagation effects. In others multiple observations at wide longitudinal separation are available.

In this talk, I will review recent multi-point observations taken with the SolO Energetic Particle Detector (EPD) and the PSP Integrated Science Investigation of the Sun (ISOIS) and discuss how the new data, in conjunction with models, can be used to better understand SEP acceleration and transport.

Collaboration(s)

Solar Orbiter and Parker Solar Probe teams

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