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Recurrent CIR-accelerated ions observed by STEREO/SEPT

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Coronal holes are the source of fast solar wind streams which overtake and compress the preceding slow wind. These compression regions evolve with radial distance and eventually forward-reverse shock pairs bounding a co-rotating interaction region (CIR) are formed. During solar quiet time periods, CIR-associated shocks become the dominant source of energetic ion increases observed near 1 AU in the energy range $\sim$20 keV/n to $\sim$20 MeV/n. Recurrent CIR-accelerated ion events have been regularly observed during 2007 by the Solar Electron and Proton Telescope (SEPT) onboard the twin STEREO spacecraft. The increasing angular separation between STEREO-A and STEREO-B and the additional observations available from near-Earth spacecraft provide an excellent opportunity for the multi-spacecraft analysis of the CIR-associated particle events in the inner heliosphere during an extended period of low solar activity. Ballistic backmapping has been used to correlate multi-point in-situ measurements of solar wind, magnetic field and energetic particles and coronal synoptic maps. This allowed the identification of the parent coronal holes and the tracking of the same stream for several consecutive rotations. Results roughly agree with the expected behaviour assuming an idealized co-rotation scenario, however, differences in fine-scale structures are sometimes present. These deviations become more evident as the angular separation between STEREO A and B increases.