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STEREO observations of energetic particle events during the rising phase of solar cycle 24

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The Solar Electron and Proton Telescope (SEPT), one of four instruments of the Solar Energetic Particle (SEP) suite for the IMPACT investigation aboard the STEREO spacecraft, is designed to provide the three-dimensional distribution of energetic electrons and protons with good energy and time resolution. This knowledge is essential for characterizing the dynamic behavior of CME and solar flare associated events. SEPT measures electrons in the energy range from 30 to 400 keV and protons from 60 to 7000 keV. Anisotropy information on a non-spinning spacecraft is provided by the two separate telescopes: SEPT-E looking in the ecliptic plane along the Parker spiral magnetic field both towards and away from the Sun, and SEPT-NS looking vertical to the ecliptic plane towards North and South. On November 3, 2009 03:50 UT STEREO-A observed an impulsive energetic electron event, in connection with a type III burst and EIT wave originating from the active region (AR) 11029. While the longitude of the nominal magnetic foot point of the spacecraft was very close to the AR, the latitudinal separation was about 20 degrees. Velocity dispersion was found when applying the inverse particle velocity as a function of time. On December 22 both STEREO SEPT as well as SOHO EPHIN measured an intensity increase of several 100 keV electrons and a few MeV protons. This event is therefore the first event in solar cycle 24 which was observed at least over 130 degrees in longitude. The properties of these events will be presented.