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Electron spikes, type III radio bursts and EUVI jets on February 22, 2010

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The Solar Electron Proton Telescope (SEPT) aboard the twin STEREO spacecraft measures electrons and ions in the energy range from 60 to above 400 keV with an energy resolution better than 10%.

On February 22, 2010 during a short interval of 100 minutes, a sequence of impulsive energetic electron events in the range below 120 keV was observed with the STEREO-A/SEPT instrument. Each of the four events was associated with a type III radio burst and a narrow EUVI jet. All the events show nearly symmetric "spike"-like time profiles with very short durations $\simeq$ 5 min. The estimated electron injection time for each individual event shows a small time delay between the electron spike and the corresponding type III radio emission and a close coincidence with EUVI jet.

These observations reveal existence of spike-like electron events showing nearly "scatter-free" propagation from the Sun to STEREO-A. From the time coincidence we infer that the mildly relativistic electrons are accelerated at the same time and at the same location as the accompanying type III emitting electrons and coronal EUVI jets. The characteristics of the spikes reflect the injection and acceleration profiles in the corona rather than the interplanetary propagation effects.