# SOLAR ELECTRON BURST SPECTRA AT VERY LOW ENERGIES

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More than 100 solar electron bursts, nominally associated with solar flares and type III radio bursts, have been observed at energies below ˜1.4 keV with the extremely sensitive Los Alamos solar wind plasma experiment on ACE. Most of these energetic electron bursts exhibit clear energy and angle dispersion, with the most energetic and most field-aligned particles arriving first. Strong anti-sunward streaming persists throughout these events, many of which persist for more than 8 hours at 1 AU. Rise times to maximum intensity at 1.4 keV typically are 1-2 hr. A large fraction of the bursts can be observed above the background solar wind strahl down to energies of ˜500 eV; a small subset have been detected above the strahl to energies as low as 140 eV. In order to correct for energy dispersion en route from the Sun, we use peak flux values, which occur at ever later times at lower energies, to determine the true burst energy spectra at 1 AU. In all of the events examined to date, the peak flux distribution function, f(v), is well characterized by a power law in energy down to the lowest energies observed. Thus, in contrast to previously reported burst spectra, the true burst spectrum observed at 1 AU does not turn over at low energies before merging with the solar wind strahl. We believe our observations are best interpreted in a model whereby a very small fraction of the electrons heated in a flare and trapped on closed field lines relatively low (< ˜0.2 Ro) in the solar atmosphere continuously leak onto open field lines as the trapped flare plasma cools over many hours. Where coronal densities at these heights are less than ˜10ˆ7 cmˆ-3, these leaked electrons escape to the heliosphere to produce the observed bursts.