

Extended Energy Elemental Spectrum Measurements with the Solar Isotope Spectrometer (SIS)

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The Solar Isotope Spectrometer (SIS) aboard the Advanced Composition Explorer (ACE) has been measuring solar energetic particle abundances since ACE was launched in August 1997. SIS is a silicon detector telescope that identifies charged particles via the multiple dE/dx vs. total energy technique, and to date, most measurements reported by SIS have been limited in energy to those particles that stop in the instrument. In this paper, we will summarize the multiple dE/dx technique used to identify particles that penetrate through the bottom of the instrument, greatly extending the energy ranges measured by SIS. In preliminary analysis, the upper energy limit for oxygen has been extended from ~ 90 MeV/nuc for stopping particles to ~ 240 MeV/nuc for penetrating particles, and the upper energy limit for iron has been extended from ~ 168 MeV/nuc to ~ 300 MeV/nuc. We apply this technique to SIS measurements of recent, large SEP events, such as the Nov. 6, 1997 event and the recent Jan. 20, 2005 event, to extend the measured spectra, to look for evidence of spectral breaks, and to compare these measurements with other SEP characteristics.

This document is a confirming abstract. A final paper will be submitted before the conference.