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# Energetic Particle Acceleration at Near-Earth by Interplanetary Shocks

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From supernova remnant shocks to the solar wind termination shock, interplanetary shocks and planetary bow shocks, collisionless shocks are responsible for much of the energetic particle acceleration throughout the Universe. Particles can gain energy while interacting with shocks in many different ways. Each acceleration mechanism produces distinct features in energetic particle anisotropies, spectral indices, and time intensity profiles. Thus, a study of *in-situ* interplanetary shocks and particle distributions in their vicinity provides the only meaningful way to test our theoretical understanding of shock acceleration. The locally accelerated component of a transient interplanetary (IP) shock has been called an Energetic Storm Particle (ESP) event. During the current solar cycle, advanced particle instruments on board both the ACE and Wind spacecraft have detected numerous IP shocks and ESP events and therefore provided us with an ideal dataset to study IP shock acceleration in unprecedented detail. For example, ACE has detected 298 IP shocks during the period February 1998 to December 2003. More than half of these shocks produced ESP-type signatures in the intensities of ions >47 keV. In this paper, we present results of statistical analysis of IP shocks we measured on ACE. We will investigate the ion composition and energy spectra for these events and investigate their relationship with the locally measured properties of the IP shocks in the context of well-known shock acceleration theories.