

# Investigation of Broadband Electrons During Magnetic Storms by Using FAST Satellite Data

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The DMSP satellite observed particular flux enhancements of precipitating electrons over the broad energy range of 30eV-30keV near the equatorward edge of the aurora oval during magnetic storms. These flux enhancements were termed as broadband electrons [Shiokawa et al., GRL, 1996]. We investigate characteristics of broadband electrons by using particle energy spectra, pitch angle distribution, electric field, magnetic field, and wave spectra obtained by the FAST satellite in high-time resolution.

First, we investigated the FAST energy spectra for eighty-one large magnetic storms from September 1996 to March 2004, during which peak Dst indices reach less than -100nT. Sixteen events of broadband electrons were identified. Parallel electron flux tends to be higher than perpendicular electron flux during the broadband electron events. Intense field-aligned currents and low-frequency (~0-10kHz) waves were also observed. These characters were common for the selected events. In the presentation, we report a detail analysis of the broadband electrons observed on July 15 2000.