

39th COSPAR Scientific Assembly 2012

Space Plasmas in the Solar System, including Planetary Magnetospheres (D)
Acceleration Processes in the Magnetosphere (D3.4)

**ELECTRON MICROBURSTS AS A MECHANISM OF ELECTRON LOSS VIA
WAVE-PARTICLE INTERACTIONS**

Shrikanth Kanekal, shrikanth.g.kanekal@nasa.gov

NASA/Goddard Space Flight Center, Greenbelt, Maryland, United States

Daniel N. Baker, daniel.baker@lasp.colorado.edu

LASP / University of Colorado, Boulder, Colorado, United States

Joseph Fennell, joseph.f.fennell@verizon.net

The Aerospace Corporation, Los Angeles, California, United States

Berndt Klecker, berndt.klecker@mpe.mpg.de

Max Planck Institute for Extraterrestrial Physics, Garching, Germany

E. J. Summerlin, errol.summerlin@nasa.gov

NASA Goddard Space Flight Center/Heliophysics Science Division, Wyoming, United States

Electron microbursts are rapid fluctuations of electron fluxes occurring on time scales of milliseconds. They are thought to be due to scattering into the loss cone by plasma waves of various types from chorus to the recently observed large amplitude whistlers. They may be a major process of loss of relativistic electrons from the Earth's outer radiation belts. One of the key issues that new missions such as RBSP will address is to understand the loss of relativistic electrons. The SAMPEX mission launched in 1992 and still collecting data has the HILT sensor onboard with the capability of measuring > 1 MeV electrons with a high time resolution of 20 milliseconds suited admirably for the study of microbursts. We will use the data collected by the HILT for over a decade to characterize the relationship between electron microbursts and macroscopic electron decay lifetimes. With the launch of RBSP it is expected that SAMPEX will continue to collect data and overlap with RBSP. The latter will provide valuable information regarding plasma waves which coupled with low altitude measurements of microbursts may help elucidate details of the physics of electron loss from the radiation belt.