

[7SO-15] **Statistics of Solar Proton Events : Peak flux, durations, and time intervals, from 1997 to 2003**

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Space weather is significantly affected by coronal mass ejections (CMEs) and solar proton events (SPEs). Although SPE less frequently occurs than CME in solar maximum and solar minimum intervals, SPE is one of the most dangerous solar events for astronauts and satellites. In our study, we investigate what parameters of CME determine the occurrence and times of SPE. We use the SPEs based on the NOAA definition with a threshold of > 10 MeV. Under this criterion, 49 SPEs were identified during the period of 1997-2003. To statistically examine the relationship between SPE characteristics and their associated coronal mass ejections, we use (1) CME speeds, accelerations, widths, locations, and directional parameter, based on SOHO/LASCO catalog and (2) SPE rise time, duration time, decrease time and peak intensity.

[7SO-16] **Association between solar flare and proton events according to radio flux spectral type**

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To investigate characteristics of radio rich flare in decimetric range, we consider maximum flux from RSTN(Radio Solar Telescope Network) data from 2004 to 2006. For this we chose 33 RSTN events whose GOES X-ray intensity is over X class, and selected the maximum flux at each 8 frequency bands. We classified them into 3 types according to flux distribution. In the first type, the radio flux is high in both of metric and microwave ranges. We define this spectra type burst as U-shaped burst. In the second type, radio flux is dominant in the decimetric range (1-3 GHz). We define this spectra type burst as reversed U-Shaped burst. In the third type, radio flux is dominant in microwave. We define this spectra type burst as C type burst. In addition, we investigated the association with proton event for each burst spectra type. As a result, we found that there is large proton event association of 75%, 80% and 96% for U-shaped, reversed U-shaped and C-type, respectively.