

Solar Modulation During the Descending Phase of Solar Cycle 24 Observed with CALET on the International Space Station

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Observation of the low-energy cosmic rays by the CALorimetric Electron Telescope (CALET) installed on the International Space Station has been successfully performed by a Low-Energy Electron (LEE) shower trigger mode that is active only at high geomagnetic latitude. In order to investigate the solar modulation during the descending phase of the solar cycle 24, we have measured the low-energy electrons and protons by using data obtained by the LEE shower trigger mode for 1815 days of operation. We have confirmed that the flux of the low-energy electrons measured by CALET during the solar minimum has reached its maximum, which is comparable or exceeded the maximum flux observed with PAMELA in the last solar minimum period. We have also obtained count rates of electrons and protons that have the same average value of rigidity, which show clear charge sign dependence that is consistent with that expected from the drift model of the solar modulation.

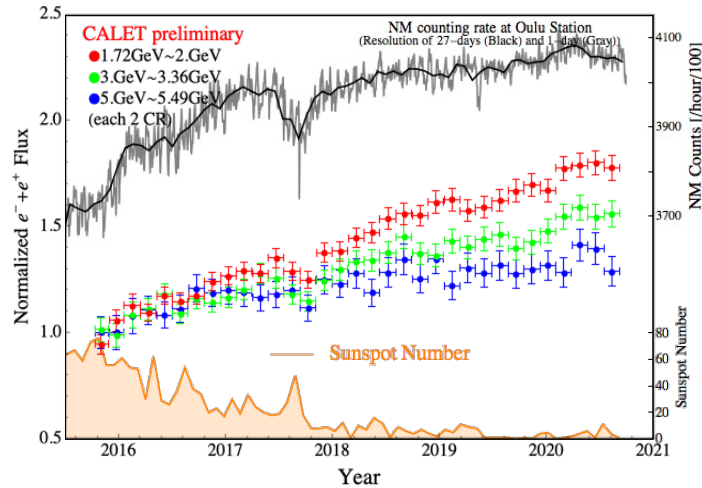


Figure 1: Time profile of the normalized flux of the low-energy electrons from October 2015 to September 2020.

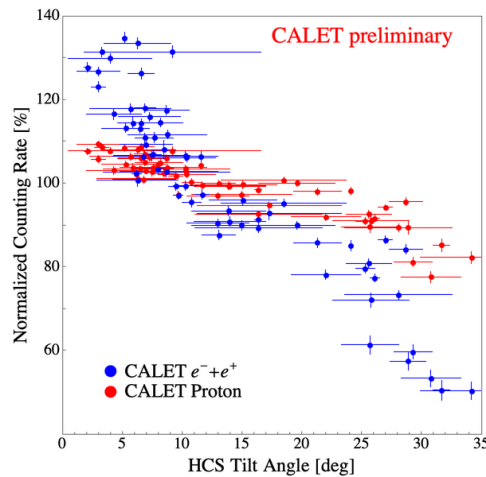


Figure 2: Correlation with normalized count rates of electrons and protons and a tilt angle of the heliospheric current sheet.