

Observation of Pulsating Aurora Signatures in Cosmic Noise Absorption Data

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This study investigates the contribution of energetic ($E > 30$ keV) particle precipitation during a pulsating aurora event over Kilpisjärvi ($L=6.2$) on 26 February 2014. It is based on the comparison of auroral blue-line emission (427.8 nm) data from an all-sky camera and cosmic noise absorption (CNA) data obtained from a multi-beam experiment of the Kilpisjärvi Atmospheric Imaging Receiver Array (KAIRA) riometer. The data sets are compared for three KAIRA beams close to magnetic zenith. Results show a clear correlation between the measured CNA and the auroral blue-line emission during the event, for each beam. In addition, individual pulsations are observed for the first time in the cosmic noise absorption data measured by KAIRA. A superposed epoch analysis of the pulsating time intervals confirms that these pulsating signatures are consistent with those seen in the optical data. This suggests that both auroral and energetic electron precipitation is modulated during this pulsating aurora event.