



Cluster spacecraft Observations of Electric Field and Particle Acceleration Caused by Anomalous Wave-Particle Resistivity in Space Plasmas.

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Electrons hitting the upper atmosphere can give rise to the aurora. The electrons are accelerated by quasi-static electric fields parallel to the geomagnetic field. It is not known how such kilo-Volt potential differences can be maintained in collisionless plasmas. We present observations by two Cluster spacecraft of large-scale currents, resistivity caused by ion-acoustic waves, and the subsequently generated parallel electric fields of a few mV/m. Observations by three Cluster satellites shows an extension of the acceleration region along the geomagnetic field of a few thousand kilometres, resulting in the observed electron energy of a few keV.