

O4.404 Particle Transport Energisation and Loss in the Alfvénic Inner Magnetosphere

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See the full abstract here <http://ocs.ciemat.es/EPS2019ABS/pdf/O4.404.pdf>

Observations recorded from NASA's Van Allen Probes have revealed the prevalence of a broad spectrum of Alfvénic field fluctuations in the inner magnetosphere. The properties of these waves in the inhomogeneous plasma of this region of near-Earth space give rise to a number of resonant and non-resonant interactions between the waves and the plasma that lead to the transport of relativistic electrons across magnetic field-lines, the loss of the same through the magnetopause and to the atmosphere, as well as the extraction and energisation of ionospheric plasmas into the magnetosphere. Transport coefficients and simulations for observed wave spectra along with features of the observed particle distributions and measurements of magnetospheric particle pressures suggest that these processes are competitive with the traditional mechanisms invoked for particle transport, energisation and loss in Earth's inner magnetosphere. We present an overview of these observations and associated physics to demonstrate how important these 'new' processes may be for explaining global variations in near-earth space during geomagnetically active times.

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