

Precipitating electrons and drift motions of auroral emissions

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Auroral arcs including fine-scale structures are frequently observed in the high-latitude auroral region. These fine-scale structures are drifting toward arc-aligned direction with folded/vortical structures. According to the observations by Reimei satellite, there are, in many cases, electron energy-time dispersions above the arcs, which indicate field-aligned acceleration due to Alfvén waves. However, an precipitating energy flux carried by the energy-time dispersions is not enough to generate the observed auroral luminosity. If we assume that the observed motion of auroral fine-scale structures reflects the motions of plasmas in the auroral acceleration region, an estimated velocity shear of plasmas can be in a range where Alfvén waves can be generated.