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Kinetic Alfvén Waves and Auroral Particle Acceleration

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In the auroral zones of Earth, Jupiter and probably other planets, acceleration by kinetic Alfvén waves can cause precipitation of electrons into the upper atmosphere, where they can excite the atoms and molecules that give rise to auroral emissions. Although satellite observations show that often these emissions are associated with a nearly monoenergetic electron beam, they can also be associated with a more broadband electron population. Such broadband acceleration of particles is consistent with acceleration in kinetic Alfvén waves that have periods comparable to the transit time of electrons through this region, which is typically a few seconds. Waves with these periods can be produced at low altitudes (within one planetary radius) due to the increasing Alfvén speed in this region, which is known as the ionospheric Alfvén resonator. This region is in the regime where the electron thermal speed is much less than the Alfvén speed, in which case the electron inertial effect is dominant. However, at higher altitudes, the parallel electric fields of kinetic Alfvén waves can also accelerate electrons. This talk will review the theory and observation is Alfvenic acceleration of auroral electrons in both the auroral zones of Earth and Jupiter.

References
The references related to your talks will be used to write summary paper in RMPP (Rev. Mod. Plasma Phys.). So do not miss important papers related to your talk.

Figure xx

Note: Abstract should be in (full) double-columned one page.