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Effects of electron drifts on collisionless damping of kinetic Alfvén waves

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Collisionless dissipation of obliquely propogating Alfvén waves has been a promising candidate to solve the solar wind heating problem. Extensive studies have examined kinetic properties of Alfvén waves in simple Maxwellian or Bi-Maxwellian plasmas. However, the solar wind electron velocity distribution function is more complex. A study of Alfvén waves in a plasma, whose electrons consist of two drifting populations in the proton bulk frame, is reported here. We numerically solve the linearized Maxwell-Vlasov equations and find that the damping rate and the proton-electron energy partition for Alfven waves have been significantly modified in such plasmas, comparing to their counterparts without electron drifts. We suggest that electron drift is an important factor to take into account when considering the dissipation of Alfvénic turbulence in the solar wind.