

Abstract Submitted  
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**Efficiency of proton-driven Weibel instability at thermalizing initially two-temperature astrophysical plasmas<sup>1</sup>** CHUANG REN, ERIC BLACKMAN, University of Rochester, WEN-FAI FONG, M.I.T. — Whether an efficient collisionless temperature equilibration mechanism exists for a two-temperature ion-electron plasma, with  $T_i > T_e$ , is important for understanding astrophysical phenomena such as radiatively inefficient accretion flows and supernova remnants. Here we study whether Weibel instability driven by a proton temperature anisotropy can be such a mechanism. Analysis and PIC simulations find that in an unmagnetized plasma, although the instability grows at a rate much larger than the ion-electron collision rate, the saturated magnetic field is low and inefficient to couple the ions and electrons. It is speculated that in a magnetized plasma the instability can provide a more efficient coupling.

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