

Abstract Submitted
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Enhanced cross-field electron transport due to multidimensional plasma turbulence¹ KENTARO HARA, Stanford Univ, SEDINA TSIKATA, CNRS — Electron transport across the magnetic field lines plays an important role in low-temperature plasmas. The plasma waves induced by kinetic instabilities, such as the electron cyclotron drift instability (ECDI), can de-trap electrons, leading to fluctuation-induced electron transport. We have recently investigated the effects of multidimensional plasma waves, initiated by both ECDI and the ion-ion two stream instability due to streams of singly- and doubly-charged ions, on the cross-field electron transport. These instabilities have been shown experimentally and analytically to coexist in $E \times B$ plasma devices. The numerical results capture not only the presence of both instabilities, but also show that the multidimensional plasma wave structure arising from their presence enhances the electron transport across the magnetic field lines.

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