Abstract Submitted
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Evidence for anomalous resistivity in a helicon plasma source BORIS BREIZMAN, University of Texas at Austin — Measurements and modeling of the rf field structure in a helicon plasma source at UT have demonstrated that these fields represent radially localized helicon waves that propagate in the axial direction. A good agreement in the absolute amplitude and phase of the fields between measurement and simulation could only be reached by enhancing the electron Coulomb collision frequency by a factor of 30 in the simulation. We attribute the enhanced collision frequency to the excitation of an ion-acoustic instability, as the electron azimuthal diamagnetic drift exceeds the ion sound speed under the experimental conditions. This interpretation is also consistent with the observed suppression of the electron heat transport along the magnetic field lines.

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