

Abstract Submitted
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Sheath induced instabilities in plasmas with $\mathbf{E}_0 \times \mathbf{B}_0$ drift AN-DREI SMOLYAKOV¹, WINSTON FRIAS², University of Saskatchewan, IGOR KAGANOVICH³, YEVGENY RAITSES⁴, Princeton Plasma Physics Laboratory — It is shown that ion acoustic waves in plasmas with $\mathbf{E}_0 \times \mathbf{B}_0$ electron drift become unstable due to the closure of plasma current in the chamber wall. Such unstable modes may enhance both near-wall conductivity and turbulent electron transport in plasma devices with $\mathbf{E}_0 \times \mathbf{B}_0$ electron drift and unmagnetized ions. It is shown that the instability is sensitive to the wall material: a high value of the dielectric permittivity (such as in metal walls) reduces the mode growth rate by an order of magnitude but does not eliminate the instability completely.

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