

Abstract Submitted
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Particle-in-cell simulations of ambipolar and nonambipolar diffusion in magnetized plasmas ROD BOSWELL, TREVOR LAFLEUR¹, Australian National University — Using a two-dimensional particle-in-cell simulation, we investigate cross-field diffusion in lowpressure magnetized plasmas both in the presence and absence of conducting axial boundaries. With no axial boundary, the cross-field diffusion is observed to be ambipolar, as expected. However, when axial boundaries are added, the diffusion becomes distinctly nonambipolar. Electrons are prevented from escaping to the transverse walls and are preferentially removed from the discharge along the magnetic field lines, thus allowing quasi-neutrality to be maintained via a short-circuit effect at the axial boundaries.

¹Presently at Ecole Polytechnique, Paris, France

Rod Boswell
Australian National University

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