

Abstract Submitted
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Collisional Particle-In-Cell simulation of collision-less counter-streaming plasmas¹ LAURENT DIVOL, A. KEMP, S. ROSS, LLNL, W. ROZMUS, U. Alberta, R. BERGER, B. COHEN, D. RYUTOV, H.-S. PARK, LLNL — Experimental measurements [Phys. Plasmas 19, 056501 (2012)] done at the Omega laser facility under the ACSEL collaboration have shown a strong increase of both electron and ion temperature when two counter streaming plasmas interact, while density measurements show no evidence of stagnation. Collisional PIC simulations show that the 2-stream-ion-acoustic instability can efficiently couple the ion temperature to the electron, which are heated by resistive effects. Details of the numerical difficulties encountered to obtain the correct physics will be described. In particular spurious transverse diffusion has to be controlled to avoid numerical transfer of the very large kinetic energy into thermal energy while time scales over 6 orders of magnitude have to be resolved (fs-ns).

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