

Abstract Submitted
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Electron streams formation and secondary two stream instability onset in the post-saturation regime of the classical Weibel instability M.E. INNOCENTI, GIOVANNI LAPENTA, KU Leuven, STEFANO MARKIDIS, KTH, MARIAN LAZAR, Ruhr-Universität Bochum, STEFAAN POEDTS, KU Leuven — The electrostatic activity in the post-saturation regime of the velocity anisotropy driven Weibel instability is investigated by means of 1D 3V particle in cell simulations. Two different initial simulation configurations have been chosen to characterize the electrostatic activity in the post-saturation stage. A secondary two stream instability arises in both cases. However, significant differences occur in the thickness of the electron streams, in their initial locations, and in their effects on the bulk electron phase space distribution. An Hamiltonian description of particle motion in a 1D setting explains these differences in terms of the effective potential experienced by particles as a function of their initial perpendicular velocity. The different roles of the longitudinal electric field and the Lorentz force in the formation of electron streams are discussed. M.E. Innocenti et al, PoP, 18, 052104 (2011).

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