

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Early-out of Equilibrium Beam-Plasma Evolution MARIE-CHRISTINE FIRPO, LPTP Ecole Polytechnique Palaiseau, AGUSTIN LIFSCHITZ, LOA Ecole Polytechnique Palaiseau, ERIK LEFEBVRE, DPTA CEN B3 Bruyeres le Chatel, CLAUDE DEUTSCH, LPGP Université Paris XI — We solve analytically the out-of equilibrium initial stage that follows the injection of a radially finite electron beam into a plasma at rest and test it against particle-in-cell simulations. For initial large beam edge gradients and moderate beam radius w.r.t skin depth the electron beam is seen to evolve into a ring structure. For low enough transverse temperatures, filamentation instability proceeds and saturates when transverse isotropy is reached. This analysis agrees with very recent experimental beam transverse observations.

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Date submitted: 19 Jul 2006

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