

Abstract Submitted
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Evolution of relativistic electron current beam in a cold plasma with fixed background of ions ROOPENDRA SINGH RAJAWAT, SUDIP SENGUPTA, PREDHIMAN K KAW, Institute For Plasma Research, Gandhinagar, Gujarat, India-382428 — A numerical study of evolution of relativistic electron current beam in a cold homogeneous plasma with immobile ions has been carried out using one dimensional electrostatic relativistic particle-in-cell code. It is found that the beam current when longitudinally perturbed by imposing a relativistically intense wave, diminishes with time due to phase mixing effects, arising because of spatial variation of relativistic mass. Studies have been conducted for various flow velocities (v_0/c) and relativistic intensities ($\frac{eE_0}{m\omega_{pe}c}$) of the perturbed wave. Rate of decay of current decreases with increasing flow velocity for a fixed ($\frac{eE_0}{m\omega_{pe}c}$); and for a given initial current the final magnitude of current decreases with increasing relativistic intensity of the perturbed wave.

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