

Abstract Submitted
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The controlling role of envelope mismatches in intense inhomogeneous charged beams¹ FELIPE RIZZATO, EVERTON SOUZA, ANTONIO ENDLER, IF-UFRGS, RENATO PAKTER, IF-IFRGS, ROGER NUNES, FURG — Inhomogeneous cold beams undergo wave breaking as they move along the axis of a magnetically focusing system. All the remaining control parameters fixed, the earliest wave breaking is a sensitive function of the inhomogeneity parameter: the largest the inhomogeneity, the soonest the breaking. The present work analyzes the role of the envelope size mismatches in the wave breaking process. The analysis reveals that the wave breaking time is also very susceptible to the mismatch. As mismatched and matched beams are compared, one finds out that judiciously chosen mismatches can largely extend the beam lifetimes. The work is extended to include some recently discussed issues: the presences of fast and slow regimes of wave breaking regimes are identified, and the role of thermal velocity distributions in space-charge dominated beams. In all instances, the theory is shown to be accurate against simulations.

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