

Abstract Submitted
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Charged particle acceleration in dense plasma channels¹ I.Y. DODIN, N.J. FISCH, Princeton University — Particle acceleration in plasmas with up to solid-state densities is revisited, with account for multiple scattering that results in collisional losses of energy and pitch-angle diffusion. The latter leads to particle escaping from the driving field; thus channeling is required for efficient acceleration and, in turn, brings in additional radiative dissipation. We derive the channeled particle distribution and reduced nonlinear equations for the oscillation amplitude and the particle energy. The maximum energy gain, as limited by dissipation, is described by three different scalings depending on the channel parameters.

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