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Investigation of Laser wakefield acceleration using relativistic Vlasov-Maxwell code

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Abstract

In this paper, we investigate the electron laser wakefield acceleration using the numerical solution of relativistic Vlasov-Maxwell equations with the semi-Lagrangian method. We show that optimum pulse length to excite strong wakefields by the investigation of electric fields and density variation, which is caused by the propagation of intense relativistic laser pulse in under dense plasma, as well as average kinetic energy of electrons, for the lasers with different pulse lengths.

Keywords: Vlasov-Maxwell, semi-Lagrangian method, laser wakefield acceleration, optimum length

For full article, refer to the Persian section