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Electron acceleration in an ion channel by a magnetized plasma wave

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Abstract

In this paper, the acceleration of an electron in the interaction with a plasma wave and a magnetized ion-channel is analyzed. The electron dynamics is studied treated employing complete three-dimensional Lorentz force equations. A relativistic three dimensional single particle code is used to obtain the electron-trajectories. The results of numerical calculation show that the electrons can be accelerated in the magnetized channel. Furthermore, the electron energy gain with axial magnetic field is compared to that without axial magnetic field.

Keywords: laser- plasma interaction, ion-channel, plasma wave

For full article, refer to the Persian section