

Abstract Submitted
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Laser Induced Autoresoance Acceleration of Charged Particle In Vacuum VIKRAM SAGAR, SUDIP SENGUPTA, PREDHIMAN KAW, Institute For Plasma Research, Gandhinagar — The exact relativistic dynamics of a charged particle acted upon the electromagnetic fields of a finite duration laser pulse of arbitrary pulse length, in the presence of a static axial magnetic field, is derived. From the solutions it is demonstrated that the particles with different energies can be obtained by tuning the cyclotron frequency of particle with characteristic frequencies determined by the frequency spectra of the laser pulse. The energy gain of the particle may be further improved by subjecting it to the focused field of the laser pulse in an external magnetic field. The focused field of the laser pulse is simply modeled by slow spatial modulation of the laser intensity along the direction of the laser propagation.

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