

Abstract Submitted
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The effect of density scale length on hot electron generation in relativistic laser interaction with under dense plasma SEYED ABOLFAZL GHASEMI, MASOUD PISHDAST, JAMAL ALDIN YAZDANPANAHI, Plasma and Fusion Research School, NSTRI, Tehran, Iran — The effect of plasma density scale length on hot electron generation have been investigated in relativistic regime for under dense plasma using $1D$ PIC simulation. In our simulation, three different density scale lengths, step density, gentle ramp and steep ramp density for two short and long pulse lengths with temporal pulse duration $\tau_L = 60 fs$ and $\tau_L = 300 fs$, respectively have been used. It is found that laser pulse length and density scale length have considerable effects on the energetic electron generation. The results of simulation indicate that for the step density scale length, with respect to the short laser pulse, electrons are accelerated to higher energy level than the case with the long pulse and other scale lengths. Furthermore, time evaluation analysis of the energy distribution function shows that with the time increment of the pulse propagation, plasma electrons can reach energies about two times higher than the energy level of the long pulse case.

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