Numerical investigation of fs pulsed laser interaction with an underdense plasma FATEMEH JOKAR, ESMAEIL ESLAMI, Department of Physics, Iran University of Science and Technology (IUST), Narmak, Tehran, 16846-13114, Iran — In this paper the wakefield generation due to propagation of a Gaussian laser pulse at high intently through a plasma has been analyzed. A differential equation governing the wakefield potential is derived analytically and is solved numerically for the different laser-plasma conditions. On the basis of our numerical studies we observed that the effects of the laser intensity and pulse duration are to increase the strength of the wakefield. This means the higher intensity pulses will excite the larger density perturbation in the plasma. However, the amplitude of wakefield get decrease at larger beam waist and higher laser frequency.

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