

Abstract Submitted
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Effects of noise and fluctuations on self-trapping in the Laser J.R. CARY, U. Colorado, C. NIETER, D. BRUHWILER, D. DIMITROV, R. GIACONE, P. MESSMER, Tech-X Corp., W.P. LEEMANS, E.H. ESAREY, C.G.R. GEDDES, LBNL — Computations and experiments have shown electrons being spontaneously trapped in the wakes generated by intense laser pulses propagating in plasmas. To better understand the details of the mechanisms for trapping, we have carried out a series of convergence tests. These indicate that the amount of trapped charge is very sensitive to the numerical parameters, in part because of numerically induced fluctuations. In addition, we explore other possible trapping mechanisms, This includes collisions with background electrons and ions, which may cause scattering into the trapped region of phase space. Furthermore, the effects of density non-uniformities, perhaps generated by the plasma creation process or present in the pre-breakdown state of the neutral gas, will also be explored. Simulations will be compared to recent experiments at LBNL and elsewhere.

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