Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Self-Focusing of a Flying Focus Pulse[1] T.T. SIMPSON, D.H. FROULA, Laboratory for Laser Energetics, U. of Rochester, J. VIEIRA, Instituto de Plasmas e Fuso Nuclear-Laboratrio Associado, J.P. PALASTRO, Laboratory for Laser Energetics, U. of Rochester — The chromatic focusing of a chirped laser pulse creates a flying focus—a moving focal point that can travel at any velocity. The intensity peak formed by the focal point propagates with a self-similar profile over a distance determined by the focal positions of the minimum and maximum frequencies composing the pulse. In a nonlinear medium, weakened diffraction resulting from self-focusing modifies the propagation throughout this focal region. Here we will present theory and simulations exploring the nonlinear self-focusing of flying focus pulses and its dependence on the focal velocity.

[1]This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0003856.

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Date submitted: 28 Jun 2019 Electronic form version 1.4