

Abstract Submitted
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Control of nonlinear optical processes in plasmas, NLOP, using STUD pulses is optimal¹ BEDROS AFEYAN, MARINE MARDIRIAN, Polymath Research Inc., STEFAN HUELLER, Ecole Polytechnique, France, JOSSELIN GARNIER, Universite Paris VI, France — If Spike Trains of Uneven Duration and Delay, or STUD pulses are used instead of continuous illumination of the plasma, and the laser pulses become “on” for a few inverse growth rates of the fastest instabilities, with comparable delays between the spikes, then we can show that due to a variety of favorable mechanisms, coherent wave-wave interaction caused instabilities can be kept under control. Their growth can be kept linear and unable to turn into runaway processes as they often are in current plasmas, such as Raman scattering on the NIF. In addition, STUD pulses allow the actual true control of crossed beam energy transfer whenever it is desired and its stoppage when it is not desirable. This is achieved by temporal interleaving the pulse trains between cones of beams in indirect drive and in a spatially random subset of overlapping beams in direct drive.

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