Abstract Submitted
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Designing STUD Pulses to control laser-plasma instabilities and adapt to changing plasma conditions[1] BEDROS AFEYAN, Polymath Research, STEFAN HÜLLER, Ecole Polytechnique, France — Designing spike trains of uneven duration and delay, or STUD pulses, for ICF targets in direct and indirect drive and for shock ignition will be explored. Taming stimulated Raman and Brillouin scattering (SRS and SBS) as well as two plasmon decay, and harnessing their hot electron generation properties for fast heating purposes at higher intensities will be explored. Theoretical statistical models capturing the essential physics of STUD pulse propagation, hot spot scrambling and SRS and SBS interaction will be presented. How to control LPI in crossing pairs of beams by staggering or interleaving their STUD pulse profiles when no interaction is desired and overlapping them when energy transfer is desirable, will be demonstrated. Technological advances required to bring about the STUD pulse program including time lenses for psec time scale modulated pulses and psec time scale resolved SRS and SBS detection lasting for nsecs and laser hot spot scrambling plasma cells will be discussed.

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