Abstract Submitted
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Controlling Scattering Instabilities and Adapting to Unknown and Changing Plasma Conditions Using STUD Pulses[1] BEDROS AFEYAN, Polymath Research Inc., Pleasanton, CA, STEFAN HÜLLER, Centre de Physique Theorique, CNRS, Ecole Polytechnique, France — We will show the results of changing STUD pulse configurations in order to maintain strict control of parametric instabilities in high energy density plasmas (HEDP). Nonlinear optical processes (NLOP) in HEDP respond to changing plasma conditions which are unknown and not easily knowable by standard experimental procedures. Adapting to changing and unknown plasma conditions is one feature of STUD pulses which is absent in other beam conditioning techniques. We demonstrate this by simulating long enough that plasma conditions change, instability gains are altered and new STUD pulse configurations become necessary. Two such configurations are spliced together or run independently and compared. All available methods of changing STUD pulse characteristics are explored, such as duty cycle (20% vs 50%) and modulation period (cutting hot spots in half and into quarters) as well as phase scrambling and number of spikes before the spatial distribution of hot spots is randomized (1, 2, 3 and infinity).

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