

Abstract Submitted
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Performance of Variable Duration STUD Pulses with Fixed Peak Intensity and their Compliments¹ STEFAN HÜLLER, CPhT, Ecole Polytechnique, France, BEDROS AFEYAN, Polymath Research Inc. — The simplest approach to STUD pulse implementation, given the requisite bandwidth of the laser is to keep the peak spike intensities fixed while modulating the lasers on and off on a 1-10 ps time scale. To what extent spatial scrambling is required in this case is compared to cases where the peak spike intensity varies with the duty cycle at fixed pulse width, to preserve the energy of the overall laser pulse. We compare RPP/CPP, SSD and STUD pulses at fixed energy with both variable pulse width and fixed peak intensity configurations and vice versa. This allows us to highlight the effects of speckle statistics, memory accumulation and pump depletion in setting gain saturation levels from the ideal democratized, incoherent sums of small growth spurts equally from all regions of the plasma, vs localized and highly nonlinear growth and re-amplification due to the unchanging or much too slowly changing nature of the illumination strategy, such as RPP/CPP or SSD.

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