Abstract Submitted
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Implementation of STUD Pulses at the Trident Laser and Initial Results[1] R.P. JOHNSON, T. SHIMADA, D.S. MONTGOMERY, Los Alamos National Laboratory, B. AFEYAN, Polymath Research Inc., Pleasanton CA, S. HÜLLER, CPhT-CNRS, Ecole Polytechnique, France — Controlling and mitigating laser-plasma instabilities such as stimulated Brillouin scattering, stimulated Raman scattering, and crossed-beam energy transfer is important to achieve high-gain inertial fusion using laser drivers. Recent theory and simulations show that these instabilities can be largely controlled using laser pulses consisting of spike trains of uneven duration and delay (STUD) by modulating the laser on a picosecond time scale [1,2]. We have designed and implemented a STUD pulse generator at the LANL Trident Laser Facility using Fourier synthesis to produce a 0.5-ns envelope of psec-duration STUD pulses using a spatial light modulator. Initial results from laser propagation tests and measurements as well as initial laser-plasma characterization experiments will be presented.

[1] B. Afeyan and S. Hüller, "Optimal Control of Laser Plasma Instabilities using STUD pulses," IFSA 2011, P.Mo.1, to appear in Euro. Phys. J. Web of Conf. (2012).
[2] S. Hüller and B. Afeyan, "Simulations of drastically reduced SBS with STUD pulses," IFSA 2011, O.Tu8-1, to appear in Euro. Phys. J. Web of Conf. (2012).

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