Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Tunable Plasma-Wave Laser Amplifier. J. BROMAGE, D. HABERBERGER, A. DAVIES, S. BUCHT, J.D. ZUEGEL, D.H. FROULA, Laboratory for Laser Energetics, U. of Rochester, R. TRINES, Rutherford Appleton Laboratory, Didcot, UK, R. BINGHAM, J. SADLER, U. of Strathclyde, Glasgow, UK, P.A. NORREYS, U. of Oxford, Oxford, UK — Raman amplification is a process by which a long energetic pump pulse transfers its energy to a counter-propagating short seed pulse through a resonant electron plasma wave. Since its conception, theory and simulations have shown exciting results with up to tens of percent of energy transfer from the pump to the seed pulse. However, experiments have yet to surpass transfer efficiencies of a few percent. A review of past literature shows that largely chirped pump pulses and finite temperature wave breaking could have been the two most detrimental effects. A Raman amplification platform is being developed at the Laboratory for Laser Energetics where a combination of a high-intensity tunable seed laser[1] with sophisticated plasma diagnostics (dynamic Thomson scattering[2]) will make it possible to find the optimal parameter space for high-energy transfer. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

[1]S. Bucht *et al.*, "Transforming the Idler for Use in Laser–Plasma Interaction Experiments," this conference.
[2]A. Davies *et al.*, "Dynamic Thomson Scattering from Nonlinear Electron Plasma Waves in a Raman Plasma Amplifier," this conference.

D. Haberberger
Laboratory for Laser Energetics, U. of Rochester

Date submitted: 14 Sep 2016 Electronic form version 1.4