

Abstract Submitted
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Initial Tests of a Plasma Beam Combiner at NIF R. K. KIRKWOOD, D. P. TURNBULL, T. D. CHAPMAN, S. C. WILKS, R. A. LONDON, R. L. BERGER, P. A. MICHEL, L. DIVOL, W. H. DUNLOP, B. J. MACGOWAN, K. B. FOURNIER, B. E. BLUE, Lawrence Livermore Natl Lab, NIF TEAM — The seeded forward SBS process that is known to effectively amplify beams in ignition targets [1] has recently been used to design and test a target to combine the power and energy of many beams of the NIF facility into a single beam by intersecting them in an ionized gas [2]. The demand for high-power beams for a variety of applications at NIF makes a demonstration of this process attractive. We will describe experiments using a gas-filled balloon heated by 10 quads of beams, and pumped by additional frequency-tuned quads to amplify a single beam. The beam energy is indicated by gated x-ray images of both the spots produced by the transmitted pump and probe beams and the spot produced by a non-interacting quad of beams when they terminate on a foil. The first experiment produced a high brightness seed beam with significant reductions in brightness of the pumping beams, consistent with their depletion by energy transfer to the seed. Additional experiments studying spot brightness with varying pump power to determine total delivered seed beam energy and power will be discussed as available. This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344 [1] R. K. Kirkwood et al PLASMA PHYSICS AND CONTROLLED FUSION 55, 10, 103001 (2013) [2] R. K. Kirkwood et al Bull. Am. Phys. Soc. 60, 19, UP12.00021 (2015), *ibid* . 57, 12, CP8.00089 (2012)

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