

Abstract Submitted
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Use of zooming and pulseshaping for acceleration to high velocities and fusion neutron production on the Nike laser MAX KARASIK, J.L. WEAVER, Y. AGLITSKIY¹, D.M. KEHNE, S.T. ZALESK², A.L. VELIKOVICH, J. OH³, S.P. OBENSCHAIN, Plasma Physics Division, Naval Research Laboratory, Washington DC, Y. ARIKAWA, Institute of Laser Engineering, Japan — We will present results from follow-on experiments to the record-high velocities of 1000 km/s achieved on Nike [Karasik et al, Phys. Plasmas 17, 056317(2010)], in which highly accelerated planar foils of deuterated polystyrene were made to collide with a witness foil to produce ~ 1 Gbar shock pressures and result in heating of matter to thermonuclear temperatures. Still higher velocities and higher target densities are required for impact fast ignition. The aim of these experiments is using the focal zoom capability of Nike and shaping the driving pulse to minimize shock heating of the accelerated target to achieve higher densities and velocities. In-flight target density is inferred from target heating upon collision via DD neutron time-of-flight ion temperature measurement. Work is supported by US DOE (NNSA) and Office of Naval Research.

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