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Neutron Generation Simulations of Collisionless Shock Experiments on NIF[1] S.C. WILKS, D.P. HIGGINSON, S.V. WEBER, D.D. RYUTOV, J.S. ROSS, H.-S. PARK, Lawrence Livermore National Laboratory, F. FIUZA, SLAC National Accelerator Laboratory — A series of simulations that model recent collisionless shock experiments at the NIF [1] will be presented. In these experiments, two opposing CD plasmas flow into each other, both plasmas arising from lasers hitting planar CD targets separated by 6, 8, and 10mm. Where the plasma flows overlap, a symmetric peak of neutron generation was observed about the mid-plane. When one of the CD foils was replaced by CH, neutron generation was still observed, but with an asymmetry about the mid-plane. The hybrid PIC code LSP [2] is used to model this interaction. Neutron yields, temporal profiles and burn widths obtained from simulation compare favorably with experimental measurements from NTOF and PTOF [3] diagnostics.

[1] S. Ross, et al., this conference (2015).
[2] D. R. Welch, D. V. Rose, B. V. Oliver, and R. E. Clark, Nucl. Instrum. Methods Phys. Res., Sect. A 464, 134 (2001).
[3] H. G. Rinderknecht, M. Gatu Johnson, A. B. Zylstra, N. Sinenian, M. J. Rosenberg, et al., Rev. Sci. Instrum. 83, 10D902 (2012)

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