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Plasma Heating and Fusion Neutron Production in Collisions of Planar CD Foils at Velocities Above 400 km/s.[1] A.L. VELIKOVICH, S.T. ZALESAK, A.J. SCHMITT, Plasma Physics Division, Naval Research Laboratory, Washington, DC, N. METZLER, SAIC and Physics Department, NRCN, Israel , M. MURAKAMI, T. SAKAIYA, K. SHIGEMORI, H. SHIRAGA, S. FUJIOKA, T. WATARI, H. SAITO, H. AZECHI, Institute of Laser Engineering, Osaka University
— Interest in experiments on colliding planar CD foils has recently been stimulated by (a) the Impact Fast Ignition approach to laser fusion [1], which involves the collision of a shell accelerated to ∼1000 km/s with high-density DT fuel, and (b) the approach to a high-repetition rate ignition facility based on direct drive with the KrF laser and a very high implosion velocity, ∼450 km/s, to reduce the ignition threshold and increase gain [2]. Studies of planar foil collisions at hyper-velocities help test feasibility of both concepts. We present the results of modeling the recent experiments at ILE, where collisions of CD planar foils produced fusion neutron yields of the order of 1E6. Analytical formulas for the neutron yield and the results of numerical simulations are compared to the experimental data.
[1] M. Murakami *et al.*, Nucl. Fusion **46**, 99 (2006).
[2] S. P. Obenschain *et al.*, Phys. Plasmas **13**, 056320 (2006).

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