Abstract Submitted
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Double-peaked proton spectra from shocks in D-^{3}He ICF capsules[1] D.C. WILSON, A.B. ZYLSTRA, LANL, S.M. SEPKE, LLNL, H. SIO, B.J. LAHMANN, MIT, E. DEWALD, R. TOMMASINI, LLNL, G.A. KYRALA, A. YI, A.N. SIMAKOV, J.L. KLINE, LANL, R.D. PETRASSO, MIT, S.H. BATHA, LANL — Proton production in D-^{3}He gas filled ICF capsules peaks twice during an implosion, at "shock flash" and bangtime. Protons at peak production rate are often down-shifted too strongly to measure. In x-ray driven capsules at NIF we have observed two peaks in the proton spectra separated by about 1.8 MeV that are associated with shocks. Two capsules had copper doped beryllium ablators, but one had silicon doped GDP. The presence of the two peaks and their proton energies agree with calculations. The lower energy peak calculates to occur earlier in the implosion after the first shock reflects off capsule center, the "shock flash". The second, higher energy peak, occurs when the outward moving shock reaches the incoming shell about 0.5ns later. It is partially reflected, heating the fuel near the shell. The fuel has compressed more, causing protons emitted inward to be downshifted below the threshold of detection. The outward moving protons, created near the shell, are downshifted only by the shell, not the fuel, giving less down-shift than in the first peak.

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