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**Shock Ignition in Non-Cryogenic Metal-Gas Targets on the National Ignition Facility**[1] L. JOHN PERKINS, C. CERJAN, V. SMALYUK, D. BAILEY, LLNL, A. COMLEY, W. GARBETT, AWE Aldermaston, P. MCKENTY, LLE U. Rochester, B. CHENG, LANL — Shock ignition offers the possibility of volumetric ignition and burn in single-shell, room-temperature gas targets on the National Ignition Facility. We are investigating whether the high fusion energy gains potentially available with shock ignition in cryogenic DT targets on NIF (*L.J.Perkins et al, PRL 103 (2009)*) can be traded for modest gains and yields in such platforms. If so, being non-cryogenic with simple single-shell construction and medium-pressure gas fill, they should easier to field and diagnose. The targets are characterized by a thick, graded-density Be-Au ablator-pusher shell with low in-flight-aspect-ratios. Because the high-Z Au shell reflects Bremsstrahlung, such targets are capable of volumetric ignition at temperatures of around 4keV with low shell velocities around 1.5e7cm/s. Gas targets are inherently low gain ($\leq$10) so they are probably not IFE relevant. The ultimate performance will be determined by degree and control of high-Z mix in the gas. Simulations indicate that we can potentially trade fusion yield for good ignition fall-line behavior by tuning gas pressure and shock launch time.

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