

Abstract Submitted  
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**The Application of Shock Ignition to Various High Gain Target Concepts.**<sup>1</sup> L.J. PERKINS, K. LAFORTUNE, A. MILES, L. DIVOL, LLNL, G. LOGAN, LBNL, R. BETTI, LLE — Shock-ignition, a new approach [1] for high gain ignition and burn is being studied for several ICF target concepts: (1) *High gain cryogenic IFE targets, driven by lasers or heavy ions*, (2) *High fusion yield targets for DOE NNSA applications*, (3) *Simple, non-cryogenic single shell gas targets*. Such concepts could be assessed on NIF following achievement of indirect-drive ignition. In contrast to conventional hotspot ignition, the assembly and ignition phases are separated by imploding a high mass shell at low velocity using a direct drive pulse of modest energy. The assembled fuel is then separately ignited by a strong, spherical shock driven by a late-time high intensity laser spike, timed to reach the axis as the main fuel is stagnating. Because the implosion velocity is significantly less than that required for hotspot ignition, considerably more fuel mass can be assembled for the same kinetic energy in the shell. Like fast ignition, shock ignition can achieve high gains at low drive energy, but has the advantages of needing only a single laser with less demanding timing and focusing.

[1] R.Betti, C.Zhou, K.Anderson, L.J.Perkins, A.Solodov, *Phys Rev. Lett.* **98**, (2007).

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