Abstract Submitted
for the SHOCK11 Meeting of
The American Physical Society

The Shock-Triggered Statistical Hot Spot Model LARRY HILL, Los Alamos National Laboratory — The standard statistical hot spot (SHS) model assumes that all hot-spot-triggered burn waves initiate simultaneously within homogenized volume elements. In reality the shock passes through such elements, igniting burn waves in a phased manner. Simple simulations are employed to illustrate the resulting shock-triggered heterogeneous reaction structure. These demonstrate that the conventional continuum prescription is unlikely to be satisfied. An alternative strategy yields a robust continuum description, and enables an analytic solution that reduces to the standard SHS model result as the burn-front-to-shock-speed ratio approaches zero. The main effect of the shock-triggered correction is to increase the apparent state-sensitivity of the reaction rate.

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Date submitted: 14 Feb 2011 Electronic form version 1.4