Abstract Submitted
for the SHOCK15 Meeting of
The American Physical Society

Ignition and Growth Modeling of Detonation Reaction Zone Experiments on Single Crystals of PETN and HMX[1] BRADLEY WHITE, CRAIG TARVER, Lawrence Livermore National Laboratory — Fedorov et al.[1] reported nanosecond time resolved interface particle velocity records for detonation reaction zone profiles of single crystals of PETN and HMX with adjoining LiF windows. Von Neumann spike and Chapman-Jouguet pressures were measured, and reaction zone lengths and times wereinferred. The single crystal detonation velocities and von Neumann spike pressures are higher than those measured for heterogeneous PETN and HMX-based explosives pressed to 98-99% theoretical maximum density. Due to the absence of voids, the single crystal detonation reaction zone lengths and times for both PETN and HMX were longer than those for their heterogeneous explosives. Ignition and Growth modeling results are compared to the single crystal PETN and HMX measurements and to previous experimental results for pressed PETN and HMX charges.

[1] A. Fedorov, et al., Combustion, Explosion, and Shock Waves **47**, 601 (2011).

[1]This work was performed under the auspices of the U. S. Department of Energy by the Lawrence Livermore National Laboratory under Contract No. DE-AC52-07NA27344.

Craig Tarver
Lawrence Livermore National Laboratory

Date submitted: 29 Jan 2015 Electronic form version 1.4