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Numerical Parameter Optimization of the Ignition and Growth Model for HMX Based Plastic Bonded Explosives JAMES GAMBINO, CRAIG TARVER, H. KEO SPRINGER, BRADLEY WHITE, LAURENCE FRIED, Lawerence Livermore National Lab — We present a novel method for optimizing parameters of the Ignition and Growth reactive flow (I&G) model for high explosives. The I&G model can yield accurate predictions of experimental observations. However, calibrating the model is a time-consuming task especially with multiple experiments. In this study, we couple the differential evolution global optimization algorithm to simulations of shock initiation experiments in the multi-physics code ALE3D. We develop parameter sets for HMX based explosives LX-07 and LX-10. The optimization finds the I&G model parameters that globally minimize the difference between calculated and experimental shock time of arrival at embedded pressure gauges. This work was performed under the auspices of the U.S. DOE by LLNL under contract DE-AC52-07NA27344. LLNS, LLC LLNL-ABS- 724898

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