

Abstract Submitted
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Understanding Detonation Corner Turning within Ultra-Fine TATB: Measurements and Modeling¹ JOSE SINIBALDI, PETER VITELLO, CHADD MAY, Lawrence Livermore National Laboratory — Detonation corner turning within insensitive high explosives has demonstrated difficulties as the insensitivity of the high explosive increases. Experiments tend to report *breakout profiles*, which show times of arrival of the detonation wave at the surface of the IHE charge. Although, various reactive flow models are able to predict these *breakout profiles*, none of these models agree perfectly with each other. Models predict major differences in pressure profiles and in the internal detonation wave propagation characteristics. Thus, the objective of this study was to provide detailed accounts of the wave propagation within an ultra-fine TATB charge, through the use embedded fiber-optic diagnostics that allowed measuring the detonation wave propagation within the ultra-fine TATB charges. In addition, these experiments were also instrumented at multiple points with Photonic Doppler Velocimetry to provide dynamic pressure profiles at the hemispherical surface; and orthogonal streak cameras to provide the conventional *breakout profiles*. Comparisons between experimental data and simulation results using a high resolution reactive flow model for ultra-fine TATB will be presented.

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