Modelling an IHE Experiment with a Suite of DSD Models
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Terrones, Burkett and Morris published an experiment primarily designed to allow
examination of the propagation of a detonation front in a 3-dimensional charge of
PBX9502 insensitive high explosive. The charge is confined by a cylindrical steel
shell, has an elliptical tin liner, and is line-initiated along its length. The detonation
wave must propagate around the inner hollow region and converge on the opposite
side. The Detonation Shock Dynamics (DSD) model allows for the calculation of
detonation propagation in a region of explosive using a selection of material input
parameters, amongst which is the D-K relation that governs how the local detona-
tion velocity varies as a function of wave curvature. In this paper, experimental data
are compared to calculations using the newly-developed 3D DSD code at AWE with
a variety of D-K relations. The effects of D-K variation through different calibration
methods, material lot and initial density are investigated.

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