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Modeling of an advanced wedge test CHRISTOPHER ROMICK, Eureka Physics, TARIQ ASLAM[1], CINDY BOLME[2], KYLE RAMOS[3], Los Alamos National Laboratory — The objective of an advanced wedge test is to offer a diagnostic that provides both spatial and temporal resolution, such that the interaction of multiple materials in the presence of an oblique shock can be examined. The materials' spatial and temporal behavior, including the deflection angle and particle velocity, can be measured using photon Doppler velocimetry and/or x-ray phase contrast imaging. However, it is not clear if the deflection of a material interface will dramatically affect the experimentally obtained values from those predicted by the semi-analytic shock polar analysis or those from a full time-dependent simulation of such an interaction. Therefore, several of these interactions are first examined for two non-reactive materials with shock polar analysis to obtain a leading order estimate of the expected behavior. This is followed by the examination of these material interfaces with a full time-dependent simulation using a ghost fluid methodology which utilizes nominally fifth-order spatial and third-order temporal discretizations. These two results are then compared with those obtained from advanced wedge test experiments. Lastly, the material interface of a high explosive impinging on an inviscid, inert material is examined.

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