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Application of Detonation Shock Dynamics (DSD) on Youngs-Type Discontinuous Interface Geometry TORU AIDA, JOHN WALTER, Los Alamos National Laboratory — Detonation Shock Dynamics (DSD) describes the evolution of two- or three-dimentional detonation wave by assuming that the detonation reaction zone is significantly small and that the curvature of the detonation wave front is also small with respect to the explosive in question. The current DSD solver obtains its input parameters by superimposing (normally rectangular Cartesian) grid points over the high explosive regions, determining signed distances from each grid point to the HE boundaries (+: inside of HE; -: outside) and assigning material identification to each grid point based on its location within the system. It has been shown to work with Lagrangian mesh where mesh entities, particularly cell faces, are contiguous and therefore, distances to material interfaces, namely HE and other materials and/or external boundaries, are precisely defined. In this paper a new scheme of DSD driver code to allow the material interfaces to be expressed in a discontinuous manner, such as Youngs material interface construction for 3D Eulerian hydrodynamics code.

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