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Dynamics of Detonation Propagation in Two-Dimensional Curved Geometries MARK SHORT, JAMES QUIRK, CARLOS CHIQUETE, CHAD MEYER, Los Alamos National Laboratory — A detonation is a complex, compressible flow-reaction driven structure consisting of a lead shock wave and subsequent reaction zone in which reactants are converted into products. In condensed-phase explosives, the generated high pressures lead to yielding of confinement, and detonation reaction zone structure becomes multidimensional. The detonation structure and speed is then determined by a complex interaction between streamline divergence, compressibility and reaction. Curved geometries are important for understanding the effects of geometry on the compressible-reactive flow mechanisms of detonation propagation, as it includes elements of shock diffraction, flow divergence and boundary interactions. Here, we study this complex compressible flow evolution in two-dimensional curved geometries, highlighting the relation between the detonation motion and induced curvature of the detonation front.

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