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Shock propagation through multiphase media

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Multiphase media are found in a wide range of natural and technological systems. Examples include clouds, foams, and sprays, with applications such as diesel engines and fluidized beds, as well as ICF capsules. In astrophysics, the interstellar medium is a multiphase system, primarily due to the form of the thermal equilibrium curve, through which strong shocks are driven by stellar wind bubbles and supernovae.

In this paper, we study the propagation of strong shocks through multiphase media using two and three dimensional simulations. The presence of inhomogeneities seeds strongly turbulent flows, which have significant effects on shock structure and the mixing of flow components. We test the applicability of one dimensional turbulent mixing models by comparison with these detailed simulations.

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