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# On the mutual penetrations of two gases submitted to the Richtmyer-Meshkov instability: Part 2 - numerical simulations

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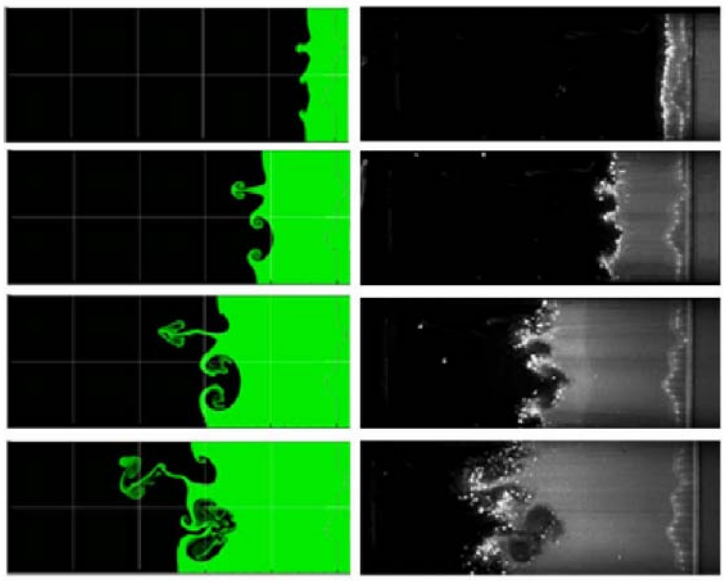
This paper deals with the numerical simulation of the mutual penetrations of two gases submitted to the Richtmyer-Meshkov instability. This simulation is compared with experiments. We have studied the evolution of an initially perturbed interface between a couple of gases (heavy/light or light/heavy). Thus, we may characterize the influence of the initial perturbation amplitude and wavelength on the Richtmyer-Meshkov instability.

Our numerical code, named CARBUR, is a finite volume code which describes compressible viscous fluid flows. The solution of Navier-Stokes equations is made by a second order scheme, for both space and time. Moreover, Van Leer slope limiter and an exact Riemann solver are used.



For example, in figure 1 are presented numerical and experimental results concerning heavy/light case (the amplitudes and wavelengths of the initial perturbations are $\lambda = 90\ mm$, $a_0 = -18\ mm$ and $\lambda = 80\ mm$, $a_0 = 14\ mm$ respectively). Compared to the initial perturbation shape, we can observe the classical evolution of a reversed and then convected interface, until the reflected shock arrival. At this time, again perturbed, the deformed and decelerated interface sees its mixing zone increase. In full paper, the physical phenomena will be numerically investigated through a parametric study.