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Shock Bubble Interaction - numerical simulations

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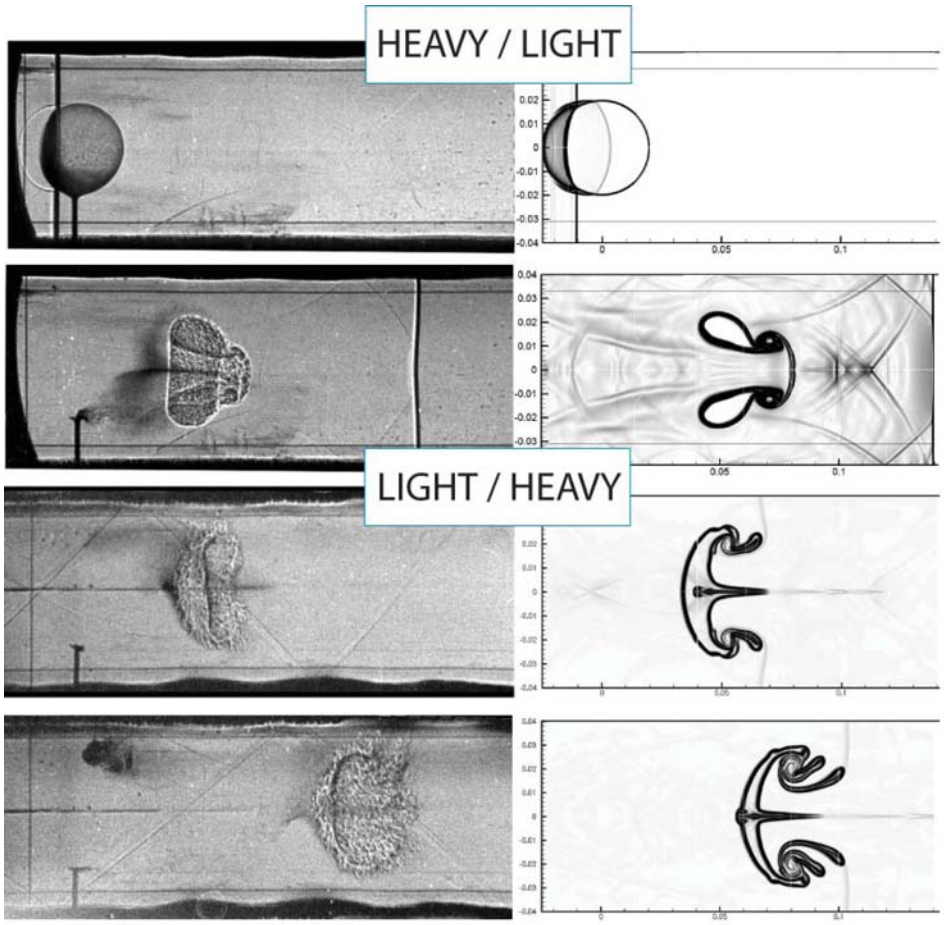
This paper deals with the numerical study of the interaction of a shock wave with different gaseous bubble. Thus, we have simulated the interaction of a shock wave moving in the air with: an *He* bubble (heavy/light), a N_2 bubble (close density), a *Kr* bubble (light/heavy). Our numerical code, named 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, with the Van Leer slope limiter and an exact Riemann solver.



As we can see on the above pictures, which represent the comparison between experimental and numerical results, different behaviours have been observed. In the heavy/light case the bubble region near its symmetric axis moves faster than the surrounding one, then the bubble reverses from the center. For the light/heavy case, it is the surrounding zone which is faster than the region near the axis, then the bubble reverses from the surrounding zone. In the full paper, including the similar density case, the physical phenomena will be numerically investigated and compared with the experiments.