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Shock Wave Diffraction around a Cylinder with Subsequent Reflection from the Shock Tube End Wall

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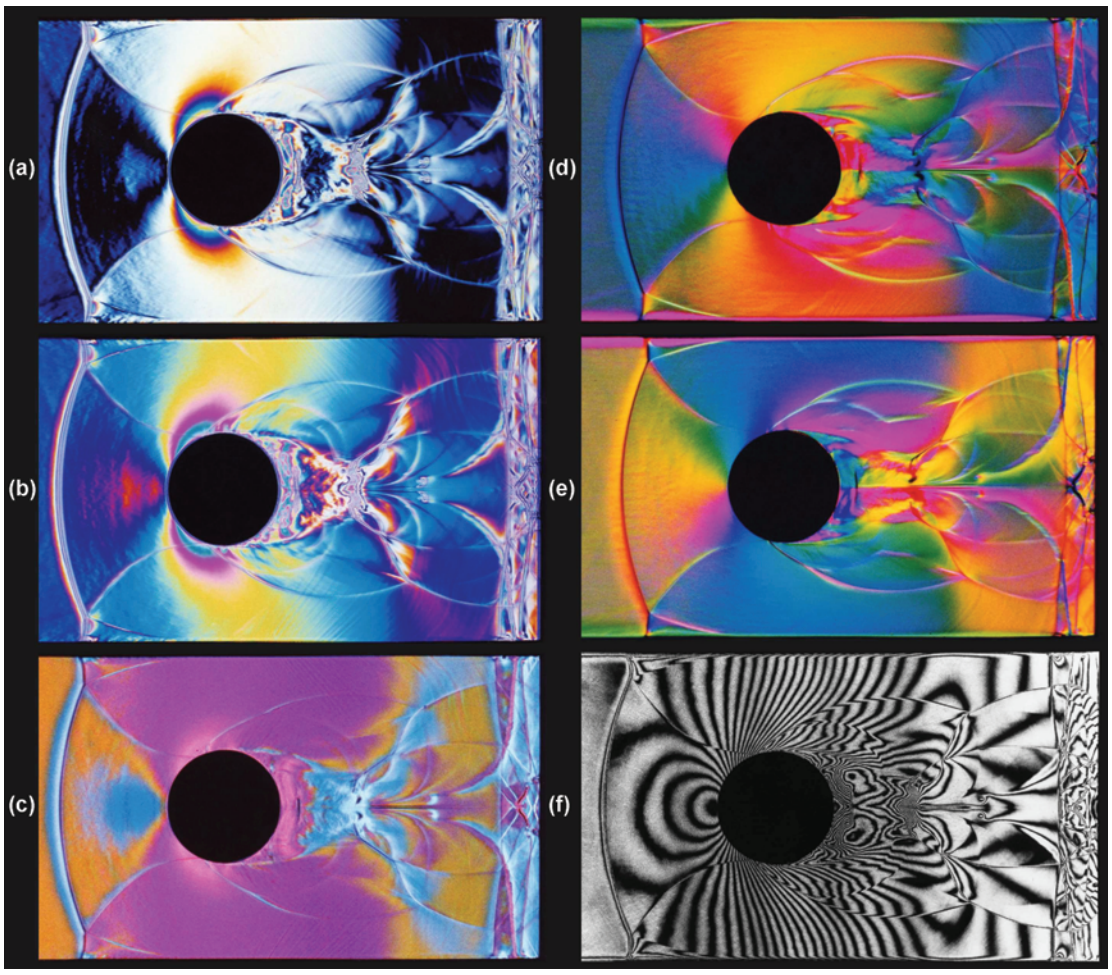

The images above show a shock wave, initially travelling with a Mach number of 2.25 in N_2, after it has diffracted around a cylinder (diameter 20 mm) and reflected from the end wall of the shock tube, located 45 mm behind the cylinder. This process has been visualized by four different density-sensitive techniques, each of which depicts the features of the flow differently. Figures (a) and (b) are infinite-fringe shearing interferograms (vertical shear; different fringes were selected for the zero-order background fringe), while Fig. (c) is a color schlieren image, where the colors represent the *magnitude* of the density gradient in flow direction. Figures (d) and (e) are also color schlieren visualizations, but here the colors show the *direction* of the density gradient rather than the magnitude of one of its components. While this introduces a certain degree of asymmetry to the image (the flow is almost perfectly symmetrical with respect to the horizontal centre axis), all the density gradients appearing in this flow become visible. Note that, for example, the boundary layers on the shock tube wall are invisible in Figs. (a)-(c). Figure (f) is a reconstructed holographic interferogram (infinite fringe setting) that shows the density distribution of the flow.