EXPERIMENTAL STUDY OF THE RICHTMYER-MESHKOV INSTABILITY IN CONVERGING GEOMETRY DEVELOPING ON THE CYLINDRICAL AND CYLINDRICAL-SINUSOIDAL INTERFACES OF GASES OF DIFFERENT DENSITIES

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The Richtmyer-Meshkov instability on the cylindrical and cylindrical-sinusoidal interfaces of gases of different densities induced by a converging shock wave was investigated.

The experiments were carried out in a vertically oriented shock tube with a 138 mm × 138 mm square cross-section, ending in a 15° wedge, under the pressure of $\Delta P = 5$ at of nitrogen in the driver. The radius of the gas interface was r = 364 mm, and the amplitude of sinusoidal perturbations on its surface was a = 2.72 mm. Two sets of experiments were carried out; the first one with the cylindrical interface of Ar–air and air–Ar gas mixtures, and the second one with the cylindrical-sinusoidal interface of air–Ar and air–SF6 gas mixtures. The velocities of transmitted and reflected shock waves were measured, and the width and growth rate of the mixing zone were estimated.

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