

Abstract Submitted
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Experimental study of global oscillations in low density rectangular jets RITHWIK N, VINOTH B. R, Indian Institute of Space Science and Technology, India — The global oscillations of helium jets from rectangular nozzles are studied experimentally. The objectives of the work are: (i) study the effect of nozzle aspect ratio on global oscillations, (ii) study the effect of velocity profile which has continuously varying Re_h and $\frac{h}{\theta}$ at the nozzle exit, on global oscillations, and (iii) control of global oscillations. The effect of aspect ratio (AR) of rectangular nozzle on the global oscillations is studied using three nozzles of $AR = 06, 12$ and 20 . The behavior of nozzles with $AR = 12$ and $AR = 20$ are found to be similar. Nozzles which have a varying height at the exit plane, are used to generate exit velocity profiles with continuously varying Re_h and $\frac{h}{\theta}$ to study the role of Re_h and $\frac{h}{\theta}$ on global oscillations of rectangular jets. It is found that the jets with the above velocity profile oscillates with single frequency. Circular wires are used to control the global oscillation of rectangular jets. The most sensitive region for rectangular jets with respect to suppression of global oscillations is found to be near the nozzle exit. But, the placement of wire at nozzle exit does not suppress the global oscillations.

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