Laser-sheet flow visualization of the confined wake behind a ring

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The flow over a ring model situated axisymmetrically in a circular pipe has been studied by the laser-sheet flow visualization technique. Over 25 rings of different sizes are investigated. The flow characteristics are observed and summarized into six regimes, in terms of the two geometrical parameters G/W and D*/W. Here, W is the width of the ring, D* is the mean diameter of the ring, and G is the gap width between the pipe wall and the outer edge of the ring. It is interesting to point out that vortex-shedding structures produced by a ring model can persist over a considerable distance downstream in three of the six regimes which correspond to different physical processes of shedding.

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