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Turbulent Pulsed Jet

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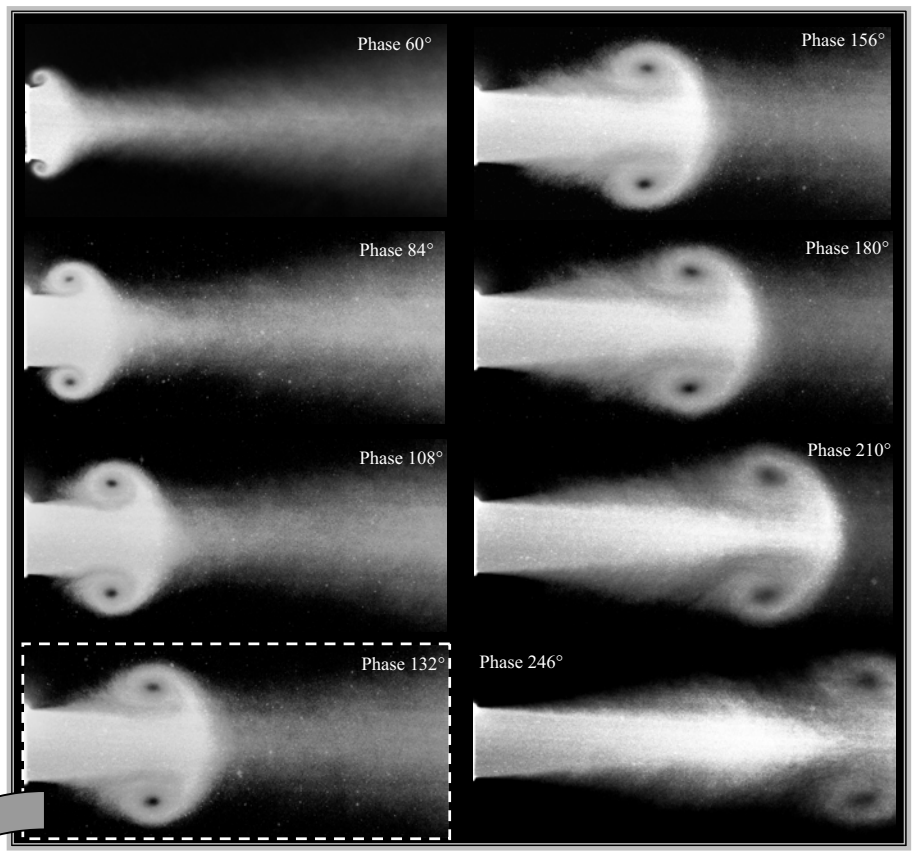
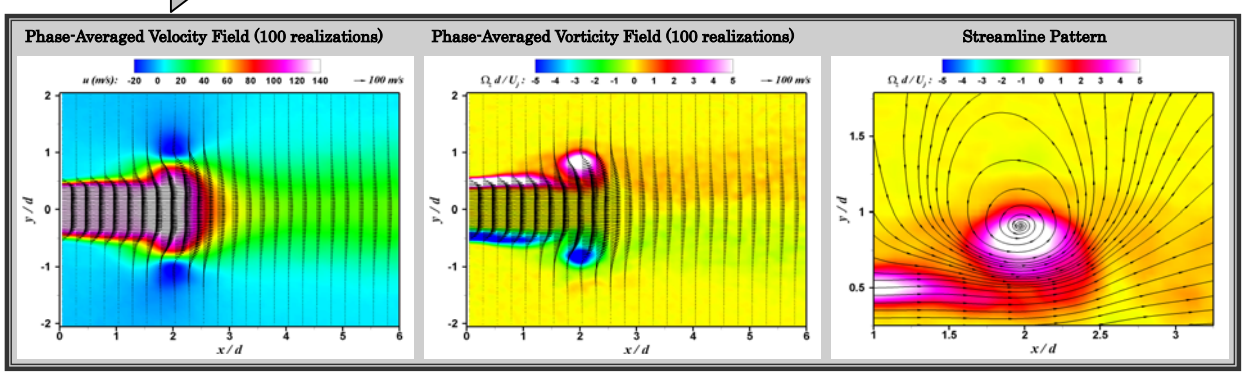


Flow visualization for M = 0.30, f =105 Hz.



A turbulent pulsed jet issuing from an axisymmetric nozzle at an operating Mach number of 0.30 (Re = 3.25 x 10^5) and a pulse frequency of 105 Hz is studied by Particle Image Velocimetry (PIV). The jet, seeded with oil droplets, is illuminated by a laser sheet in the central plane to capture phase-averaged images. The time evolution of the pulsed jet clearly shows a leading vortex ring followed by a trailing jet. The fidelity of the phase-averaged PIV measurements is vividly displayed by the hydrodynamic flow field and the associated vorticity field. The streamline pattern obtained from the velocity field exhibits strong entrainment, with reversed flow, induced by the vortex ring.