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Towards an understanding of vortex shedding frequency in conventional and quasi-two-dimensional flows. PAUL W. FONTANA, Seattle University — I investigate mean flows and the role played by surface friction and surface tension in generating them in a quasi-two-dimensional vortex shedding experiment, thereby elucidating the connection between quasi-two-dimensional effects and shedding frequency. We have previously shown that quasi-two-dimensional effects in a vertical soap film channel produce anomalously low frequencies compared with conventional observations, and that the Strouhal number (St $= fD/U_\infty$, where f is the shedding frequency, D the cylinder diameter, U_∞ the upstream flow speed) is not uniquely determined by the Reynolds number (Re $= DU/\nu$, where ν is the kinematic viscosity) [*Bull. Amer. Phys. Soc.* **57**(17), R10.7 (2012)]. Vortex shedding by circular cylinders is an archetypal flow instability, yet its physical mechanism remains poorly understood. There exists no rigorous theory predicting the shedding frequency, but evidence points to nonlinear mutual interaction between the mean flow and the shedding mode. I explore how quasi-two-dimensional effects influencing the shape the mean flow may therefore be responsible for the shedding behavior seen in the experiment.

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