Instability of laminar low-density jets

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The stability of laminar axisymmetric low-density jets has been investigated experimentally (Kyle & Sreenivasan 1993, Hallberg & Strykowski 2006) and with linear analysis (Coenen & Sevilla 2012, Coenen *et al.* 2017). In this work, Direct Numerical Simulations using FreeFEM++ (Hecht 2012) with P1 elements for pressure and P2 for velocity and density are performed to complement the abovementioned studies. Using the Stuart–Landau model to fit the numerical results for the self-excited oscillations we have computed a neutral stability curve that shows good agreement with experiments and stability theory.