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Simultaneous global modes in axisymmetric jets MICHAEL HALLBERG, PAUL STRYKOWSKI, University of Minnesota — Axisymmetric jets of varying velocity and/or density ratios (R & S respectively) have been shown to support one of two distinct global modes depending on the combination of these control knobs. Two regimes in the S - R plane have yet to be investigated, the heavy jet with a coflowing secondary stream and a light jet with a counterflowing secondary stream. Theory suggests the latter may support two separate global modes – a jet column mode and a shear layer mode. It is known that a single global mode dramatically alters flow field dynamic (eg vortex shedding); the possibility of two separate simultaneous global modes is particularly compelling. Results will be presented from a facility designed to probe the counterflowing low-density jet regime.

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