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Linear stability of circular Couette flow in the limit of small radius ratio ARNE J. PEARLSTEIN, FLORENT B. PETTEINI, University of Illinois at Urbana-Champaign — In the context of a detailed study of the linear stability of spiral Poiseuille flow at small radius ratio (Cotrell and Pearlstein, *J.FluidMech.*, in press), we have shown that in the limiting case of no rotation, annular Poiseuille flow is linearly stable at all Re, provided that the radius ratio lies below a critical value. Here, we consider the other limiting case, of no axial flow, and report a numerical investigation of the stability of circular Couette flow for small radius ratio. The results are compared to experimental work of Theodorsen for a whirling shaft in an unbounded, otherwise quiescent fluid.

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