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Flow regimes inside an expanding channel¹ PETER VOROBIEFF, The University of New Mexico, VAKHTANG PUTKARADZE, Colorado State University — The well-known Jeffery-Hamel similarity solutions describe twodimensional radial flow of viscous fluid inside an expanding channel (wedge). At Reynolds numbers greater than a certain critical value R_C , the theoretical solution becomes non-unique, with the possibility of radial velocity profiles with alternating inflow/outflow. While our earlier experimental work² confirms the absolute stability of the Jeffery-Hamel radial solution for $R < R_C$ and describes the transition to a vortex-dominated flow regime, here we present a study of the stationary and transient flow regimes that are realized for $R > R_C$ by altering the conditions at the outlet of the expanding channel.

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