

Abstract Submitted  
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**A Mixing Transition in a Viscoelastic Fluid** BECCA THOMASES,  
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University — Dynamical behavior in low Reynolds number viscoelastic flows is in-  
vestigated numerically in the Oldroyd-B model. For low Weissenberg number, flows  
are “slaved” to the four-roll mill geometry of the body forcing. For sufficiently large  
Weissenberg number, such slaved solutions are unstable and under perturbation  
transit in time to a structurally dissimilar flow state dominated by a single large  
vortex, rather than four vortices of the four-roll mill state. The transition to this  
new steady-state also leads to regions of well-mixed fluid, and may be related to a  
recently discovered transition in cross-channel flows of a viscoelastic fluid.

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