

Abstract Submitted
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Analog of Astrophysical Magnetorotational Instability in Couette-Taylor Experiments Using Polymer Fluids¹ DON HUYNH, STANISLAV BOLDYREV, University of Wisconsin – Madison — We report the experimental observations and numerical simulations of an instability in a Couette-Taylor flow of a polymer fluid in a narrow gap between two rotating concentric cylinders with a Keplerian-like velocity profile, where the angular velocity decreases radially outward while the specific angular momentum increases radially outward. Under these conditions, the inertial Rayleigh instability and the purely elastic instability are not possible. It is proposed that this observed instability is analogous to the magnetorotational instability which plays a fundamental role in astrophysical Keplerian accretion disks.

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