Abstract Submitted
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Identifying Inertial Modes in a Hide-Titman Flow MARY CATALANO, Department of Physics, University of Dallas, ROBERT BLUM, DANIEL ZIMMERMAN, DON MARTIN, DANIEL LATHROP, IREAP, Department of Physics, University of Maryland — Inertial modes are internal wave patterns present within a bounded, rotating fluid being restored by the Coriolis force. Hide and Titman[1] found that a cylindrical container filled with homogeneous liquid and having a thin disk mounted coaxially inside of it will display non-axisymmetric fluid flow when the differential rotation between the cylinder and the disk exceeds a critical threshold. Their essential geometry and setup were replicated and the fluid flow produced was analyzed to ascertain its relationship, if any, to the inertial modes of a cylinder annulus expressed in analytical form by Zhang, et al.[2] Experimental data and analyses to correlate observed fluid flows with theoretical inertial modes will be presented.

[1] "Detached Shear Layers in a Rotating Fluid." Journal of Fluid Mechanics 29, pp39-60 (1967).
[2] "On Inertial Waves in a Rotating Fluid Sphere." Journal of Fluid Mechanics 437, pp103-119 (2000).

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