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**Experimental Investigation of Flow Inside a Short Taylor-Couette Apparatus With an Air Vortex** PETER HUMANIK, Bergen County Academies, CYPRIAN CZARNOCKI, California State University San Marcos, AUSTIN ROACH, ERIK SPENCE, MARK NORBERG, HANTAO JI, Princeton Plasma Physics Lab — The study of magnetohydrodynamics (MHD) and the instabilities involved with systems is one of great interest in astrophysics. Due to the limitations in tracking the flow of fluid conductors, such as the opacity of galintan, systems involving the movement of water and other easily traceable fluids are of great relevance towards predicting flows. In this experiment, the characteristics of a vortex of air that is formed around a cylinder rotating inside a larger coaxial cylinder which is rotating at a different rate are recorded. Laser Doppler Velocimetry (LDV) provides a profile of the speed of particles in the water near the vortex. Using the data about the water speed near the vortex and the characteristics of the vortex, the flow along the air-water boundary can be predicted. The experiment will be conducted over a range of viscosities which can be achieved from mixing glycerol with the water. The results can be used as a reference for further experiments in MHD involving similar vortices.

Peter Humanik  
Bergen County Academies

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