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Dynamics of electron plasma vortex under time-dependent external strain N. C. HURST, J. R. DANIELSON, D. H. E. DUBIN, C. M. SURKO, University of California - San Diego — The behavior of two-dimensional vortex structures is of key interest in a number of important physical systems, including geophysical fluids[1] and strongly magnetized plasmas.[2] Specifically, vortices can be stripped and destroyed by external forcing (for example, from boundaries or other nearby vortices).[3] The research presented here focuses on the behavior of an initially axisymmetric vortex subjected to external straining flow fields which vary in time. Experimental results are obtained using an electron plasma confinement device, which models the 2D Euler equations for ideal fluid flow.[4] Vortex-in-cell simulation results are also presented to complement and extend the laboratory results. Specific behaviors under consideration include details of the vortex destruction mechanism, vortex adiabaticity, and vortex splitting *via* the Kelvin-Helmholtz instability.

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Noah Hurst
University of California - San Diego

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