

Abstract Submitted  
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**Distinguishing viscosity and surface friction in quasi-2D flows**

PAUL W. FONTANA, EDWARD TITMUS, Seattle University — In many experimental and natural quasi-two-dimensional (Q-2D) flows the effects of internal viscosity and surface friction are significant but difficult to distinguish. We demonstrate precise, independent measurements of both kinematic viscosity and coefficient of external drag in a Q-2D experiment using soap films in a circular Couette cell configuration, using a combination of vortex decay rates and steady-state shear lengths. Dynamics at scales shorter (longer) than the shear length are dominated by internal viscosity (surface friction). The technique can be generalized to other flow configurations and promises to aid in the quantitative analysis of many Q-2D experiments. Currently the measurements are being used to make quantitative tests of the theoretical stability threshold in 2D vortex arrays.

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