

Abstract Submitted  
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**Measurements of energy spectra in two-dimensional turbulence with sheared mean flow.**<sup>1</sup> P.W. FONTANA, M. KEARNEY-FISCHER, S. ROGERS, S. WINDELL, Seattle University — Measurements of forced turbulence in the presence of mean flow shear in quasi-two-dimensional flows in a circular Couette cell are underway. Initial observations indicate suppression of the turbulence by the shear, as suggested by observations of transport barriers in geostrophic flows and laboratory fusion plasmas. The apparatus generates flows in a liquid film of dilute soap solution suspended freely in a horizontal annular channel. The channel is 7 cm wide with an average radius of 46.5 cm. Turbulence is forced electromagnetically, while mean flow shear is generated independently by rotating the outer boundary. The mean sheared flow profiles provide a new method of estimating the coefficient of drag between the films and the air; the result,  $\sim 9s^{-1}$ , is compared with estimates from other soap film experiments using different techniques. Two-dimensional turbulence spectra are measured using particle imaging velocimetry, and data showing the effect of shear on the spectrum are presented.

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