## Abstract Submitted for the DFD12 Meeting of The American Physical Society

Experimental measurements of turbulent polymer solutions<sup>1</sup> ALEXANDRE DE CHAUMONT QUITRY, DOUGLAS H. KELLEY, NICHOLAS H. OUELLETTE, Yale University — Complex fluids modify turbulent flows over a broad range of scales, including scales much larger than the physical size of the fluid microstructure. Models have attempted to explain this phenomenon on the basis of assumptions such as enhanced effective viscosity or a critical length scale separating different flow regimes. We attempt to constrain such models with experimental measurements of bulk turbulence in a dilute solution of long-chain polyacrylamide in water. We use high-speed cameras and Lagrangian Particle Tracking Velocimetry to image the central region of a von Kármán swirling flow, in which counter-rotating impellers inject kinetic energy inertially. We observe that concentrations as low as a few parts per million can drastically modify the energy cascade.

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