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Turbulent Fluctuations in Dilute Polymer Solutions ALEXANDRE DE CHAUMONT QUITRY, NICHOLAS T. OUELLETTE, Yale University — The interaction of complex fluids with turbulent flows presents challenges illustrated in many natural and industrial phenomena. In this study, we report experiment measurements of the modification of turbulence in the presence of long-chain polyacrylamide in water. We use Lagrangian Particle Tracking to study the central region of a Von Karman swirling flow, generated by placing counter-rotating impellers in a cylindrical container. While it has been shown that concentrations as low as 1p.p.m. by weight can affect turbulent fluctuations, it remains theoretically challenging to identify a physical mechanism distinct from an increase in effective viscosity observed at higher concentrations. We attempt to characterize such a mechanism with measurements of spatial and temporal correlations of the velocity and acceleration fields.

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