Abstract Submitted
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Manipulating the anisotropy of turbulence[1] KELKEN CHANG, GREGORY BEWLEY, EBERHARD BODENSCHATZ, Max Planck Institute for Dynamics and Self-Organization, INTERNATIONAL COLLABORATION FOR TURBULENCE RESEARCH COLLABORATION — We obtain two-point velocity statistics in a turbulent flow as the flow is subject to a systematic variation from isotropy. We explore values of the ratio of axial to radial root-mean-square velocity fluctuations between 0.5 and 2.0, while maintaining cylindrical symmetry. We measure the Eulerian transverse spatial correlation function and the second order Eulerian transverse structure function at Reynolds numbers up to 500, based on the Taylor microscale, and observe changes of the integral length scales and Taylor microscales as the flow deviates from isotropy. Additionally, the energy dissipation rates for both the isotropic and anisotropic flows are estimated from the second order Eulerian transverse structure functions and the changes of these rates subject to the variation from isotropy are reported.

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