

Abstract Submitted
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Measurements of the wall-normal velocity component in very high Reynolds number pipe flow¹ MARGIT VALLIKIVI, MARCUS HULTMARK, ALEXANDER J. SMITS, Princeton University — Nano-Scale Thermal Anemometry Probes (NSTAPs) have recently been developed and used to study the scaling of the streamwise component of turbulence in pipe flow over a very large range of Reynolds numbers. This probe has an order of magnitude higher spatial and temporal resolution than regular hot wires, allowing it to resolve small scale motions at very high Reynolds numbers. Here use a single inclined NSTAP probe to study the scaling of the wall normal component of velocity fluctuations in the same flow. These new probes are calibrated using a method that is based on the use of the linear stress region of a fully developed pipe flow. Results on the behavior of the wall-normal component of velocity for Reynolds numbers up to 2 million are reported.

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