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Spatial filtering and end-conduction effects in turbulence measurements using hot wires ANAND ASHOK, MARCUS HULTMARK, ALEXANDER SMITS, Princeton University — We use grid generated homogeneous isotropic turbulence as a benchmark flow to test the effects of spatial resolution on turbulence measurements with hot wires. The grid turbulence is generated in a low speed 2' by 3' closed circuit wind tunnel using a 0.25" square mesh grid placed at the test section inlet. Measurements of the turbulence statistics and spectra downstream of the grid were made using hot-wires with a constant diameter but varying lengths. An empirical correlation for the attenuation of the energy due to spatial filtering is constructed as a function of the parameter l/η . In addition, we show that end conduction effects depend not only on the l/d ratio but also on the wire material and the wire Reynolds number.

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