

Abstract Submitted
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Effect of cooling on compressible wall-turbulence ANDREW TRETTEL, JOHAN LARSSON, University of Maryland — The modifications of the inner layer turbulence due to significant wall-cooling in a perfect gas is studied through a sequence of direct numerical simulations of compressible channel flow. The thickening of the buffer layer due to the imposed viscosity-gradient is quantified, as is the shift in the log-law intercept of the van Driest transformed velocity. The modification of the near-wall turbulent length scales and how these change with wall distance is examined. Finally, alternatives to the classic van Driest (1951) transformation of the mean velocity profile are considered.

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