

Abstract Submitted  
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**The log layer in incompressible and compressible turbulence**

ROBERT RUBINSTEIN, NASA Langley Research Center — The “log law” for incompressible wall-bounded turbulence describes a self-similar flow the properties of which follow from the hypothesis that a constant stress region exists. The compressible extension is not straightforward because the density dependence requires an additional assumption. The “compressible law of the wall” of van Driest follows by requiring that the length scale be independent of density. We consider the consistency of this and alternative hypotheses with the variable density Navier-Stokes equations and derive the locality conditions imposed by the relation between the log layer and the viscous sub-layer and wake region.

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