

Abstract Submitted
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Superhydrophobic surfaces in turbulent channel flow¹ YIXUAN LI, KRISHNAN MAHESH, University of Minnesota — We discuss results from a direct numerical simulation which resolves the features of superhydrophobic surfaces in turbulent channel flow at $Re_\tau = 400$ to study the effect of feature geometry. The height of the grooves h^+ , is 3.6, which is smaller than most previous numerical studies. A channel with only one groove on the bottom wall is first modeled to study the local effect of the groove geometry. Then an SHS with a groove coverage ratio $\phi = 87.5\%$ is created as the bottom wall of a turbulent channel flow of $Re_\tau = 400$. The effect of the grooves is quantified locally as well as over the entire channel wall. Results for slip velocity, turbulence intensity and spectra will be discussed. The influence of the grooves on the overall mean momentum budget will also be discussed.

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