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Determination of roughness scales that accurately predict frictional drag[1] KAREN FLACK, MICHAEL SCHULTZ, US Naval Academy — Significant progress has been made towards the understanding of rough-wall boundary layers and the subsequent drag penalty. Continued progress is promising since a larger range of parameter space can now be investigated. Recent advances in rapid prototyping techniques enables the generation of systematic variations of roughness scales and computationally efficient simulations with creative surface mapping techniques allows for experiments and computations to investigate similar complex roughness. While a universal drag prediction correlation is still elusive and may not be possible, predictive correlations for classes of surface roughness pertinent to engineering applications seem achievable. Three surface parameters based solely on surface statistics are showing promise in predictive correlations for a range of studies. These include a measure of surface elevation (k_{rms}, k_a, k_t) a slope parameter (ES, solidity) and the skewness of the *pdf*. Other candidate parameters that may be useful in a predictive correlation or a surface filter are the streamwise and spanwise correlation lengths.

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Karen Flack
US Naval Academy

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