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Development of roughness scaling parameters in the fully rough regime.¹ KAREN FLACK, MICHAEL SCHULTZ, United States Naval Academy — The most important unresolved question regarding surface roughness is to identify suitable roughness length scales that can be used to predict the frictional drag of a body covered with any generic roughness. The focus of this research is to identify length scales of the surface topography, obtained from profilometry, that correlate with the roughness functions, obtained from detailed boundary layer velocity profiles and towing tank tests. Results for three-dimensional roughness in the fully rough regime indicate that the two most important scales are a roughness height, such as the rms roughness height, and the skewness of the probability distribution function of the roughness height. Correlations will be presented for a variety of three-dimensional roughness types.

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