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The Effects of Superhydrophobic Surfaces on Turbulent Skin Friction and Flow Structure CHARLES PEGUERO, Brown University, CHARLES HENOCH, Navy, KENNETH BREUER, Brown University, BROWN UNIVER-SITY COLLABORATION, NUWC COLLABORATION — The application of superhydrophobic surfaces to the reduction of skin friction in turbulent flows is examined through experiments conducted in two facilities: the low-speed turbulent water channel at Brown University and the moderate speed (U = 8m/s) boundary layer facility at the Naval Undersea Warfare Center in Newport, RI (NUWC). High resolution PIV measurements are taken in the water channel at Brown University for both baseline (hydrophilic) and superhydrophobic surfaces. The mean and fluctuation velocity statistics are compared between the two surfaces. The friction velocity, u^* , is estimated from the velocity fields using several independent methods. Direct drag and LDV measurements are taken for both the hydrophilic and superhydrophobic surfaces in the water tunnel at NUWC and will be discussed.

> Charles Peguero Brown University

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