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Skin-friction and Reynolds number scaling of turbulent channel flow[1] MICHAEL SCHULTZ, KAREN FLACK, United States Naval Academy — An experimental study was conducted on smooth-wall, fully-developed, turbulent channel flow. The Reynolds number (Re_m) based on the channel height and the bulk mean velocity ranged from 10,000 – 300,000. Measurements of the flow rate and the streamwise pressure gradient allowed the skin-friction coefficient (C_f) to be determined, and its variation with Reynolds number will be discussed and compared with previous investigations. Two-component LDV measurements were also made at friction Reynolds numbers Re_τ = 1,000 – 6,000. The scaling of both the mean flow and the Reynolds stresses will be examined. In particular, the variation in these quantities with Reynolds number will be discussed.

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