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**Fluid retention in liquid infused surfaces: A direct numerical simulation study** MARTAND MAYUKH GARIMELLA, University of Texas at Dallas, STEFANO LEONARDI, The University of Texas at Dallas — Liquid infused surfaces (LIS) are surface textures wetted with infused liquid lubricant and can reduce turbulent drag up to 35%. For this purpose, we performed direct numerical simulations of a turbulent channel flow with a texture made of rectangular cavities. A viscosity ratio between the lubricant and the main stream of fluid,  $m=0.4$  is defined. The aspect ratios of the cavities, and the Weber number are varied. Compared to the flow over longitudinal bars, the rectangular mesh has additional transverse bars to close the cavity. This increases the drag but helps in retaining the lubricant. For the finite surface tension cases, a rebounding capillary pressure wave propagation is observed for the mesh configuration altering the flow dynamics close to the wall. Overall, this texture sustains the drag reduction and decreases the turbulent intensities showing promise for further studies.

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