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DNS of turbulent two-layer flows ROMAN ZHVANSKY, PETER SPELT, Imperial College London — Results will be presented for pressure-driven turbulent gas flow over a liquid layer in a 3D channel. These have been obtained with a DNS code that resolves all discontinuities across the gas/liquid interface in a sharp manner. In the simulations considered here, the interface is forced to remain flat; the corresponding kinematic condition is implemented exactly, as is the continuity in tangential stress. The wall-type region near the interface is therefore resolved. Mean profiles near the interface obtained with this method will be used to assess to what extent the turbulence can be represented by near-wall turbulence. The results for the distribution of shear stress exerted by the gas on the liquid layer have implications on large-scale modeling of turbulent two-phase flows.

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