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The effect of transitionally-rough surfaces on near-wall turbulence NABIL ABDERRAHAMAN-ELENA, RICARDO GARCA-MAYORAL, Univ of Cambridge — We present results of DNSs of channel flow with rough walls in the transitionally-rough regime, for $k^+ <= 15$. Through flow visualization and statistical analysis, we show that the resulting fluctuations can be separated into two components: one due to the overlying near-wall turbulence, and one due to the presence of the roughness. The latter is essentially the phase-averaged fluctuation that is observed also for laminar flows, but intensely modulated in amplitude by the overlying turbulence. The above decomposition of the fluctuations can be used to develop predictive models for the onset of roughness effects.

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