

Abstract Submitted  
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**Near-wall formulation for LES, Part 1: RANS/LES coupling**  
GORAZD MEDIC, JEREMY TEMPLETON, GEORGI KALITZIN, Stanford University — A novel near-wall treatment for LES is presented. A RANS eddy-viscosity corrected dynamically using the resolved turbulent stress is imposed near the wall. This formulation is derived by comparing the averaged LES equations for channel flow to the RANS equations. Another new element is the procedure for computing the RANS eddy-viscosity, which is obtained from the non-dimensional RANS equation for channel flow using the averaged velocity profile from the LES. Results obtained using the proposed formulation are compared to LES and DNS for channel flow at  $Re_\tau = 395$ . In contrast to simulations that impose RANS eddy-viscosity in the near-wall region (similar to DES), the correct mean velocity profile is recovered and fluctuations are retained near the wall. Energy spectra and flow structures compare well to DNS results.

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