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Modeling the convective and pressure terms in finite-volume LES with unresolved wall layers HENRY CHANG, ROBERT MOSER, University of Texas at Austin — An incompressible turbulent channel flow is solved using a staggered grid finite volume LES. The grid is uniform with $\Delta y^+ = 50$ and is therefore unresolved near the wall. Our primary focus is on accurately modeling the convective and pressure terms in the LES equations. We use the fractional-step method, along with a pressure model from Harlow and Welch (1965). We have found that the pressure model itself–a discrete divergence-free projection–is sufficiently accurate. It is actually the convective term and it's divergence-free projection that are inadequately modeled. In light of this, we are investigating methods for improving the convective model. For example, we are attempting to construct models which statistically represent both the convective and pressure terms from the Reynolds stress equation.

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