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A dynamic global-coefficient mixed subgrid-scale model for large eddy simulation of turbulent flows SATBIR SINGH, DONGHYUN YOU, Carnegie Mellon University — The dynamic global coefficient model of You and Moin [Phys. Fluids **19**, 065110 (2007)] is modified by employing the mixed closure of Bardina [PhD Thesis, Stanford University (1983)] as the base model. The new dynamic global-coefficient mixed model explicitly calculates the modified Leonard stress while utilizes the global-coefficient eddy viscosity model for the cross stress and subgrid-scale Reynolds stress. The dynamic procedure of determining the model coefficient is based on the "global-equilibrium" between the subgrid-scale dissipation and the viscous dissipation. The present model does not require averaging or *ad-hoc* clipping of the model coefficient, which is a highly desirable feature for large-eddy simulations in complex configurations. The model has potential to alleviate the assumption of the alignment of the subgrid- scale stress and the resolved strain rate tensor, while improving the capability for the local characteristics of subgrid-scale turbulence. In a number of test simulations, the new subgrid-scale model showed good predictive capability and was found to provide good representation of local characteristics of subgrid-scale turbulence.

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