

Abstract Submitted
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A dynamic hybrid subgrid-scale modeling framework for large eddy simulations ROMIT MAULIK, OMER SAN, Oklahoma State University - Stillwater — We put forth a dynamic modeling framework for sub-grid parameterization of large eddy simulation of turbulent flows based upon the use of the approximate deconvolution (AD) procedure to compute the eddy viscosity constant self-adaptively from the resolved flow quantities. In our proposed framework, the test filtering process of the standard dynamic model is replaced by the AD procedure and a posteriori error analysis is performed. The robustness of the model has been tested considering the Burgers, Kraichnan, Kolmogorov turbulence problems. Our numerical assessments for solving these canonical decaying turbulence problems show that the proposed approach could be used as a viable tool to address the turbulence closure problem due to its flexibility.

Omer San
Oklahoma State University - Stillwater

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