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A-priori and a-posteriori assessment of SGS models for shock-boundary layer interactions[1] AVINASH JAMMALAMADAKA, ZHAORUI LI, FARHAD JABERI, Michigan State University — A-priori and a-posteriori assessments of subgrid-scale (SGS) large-eddy simulation (LES) models are made for an incident shock wave interacting with a Mach 2 flat-plate supersonic turbulent boundary layer using direct numerical simulation (DNS) data. The governing equations for DNS and LES are solved using the seventh-order Monotonicity Preserving scheme for Euler fluxes and the sixth-order compact scheme for viscous terms. The SGS models tested included constant coefficient and dynamic eddy-viscosity and similarity models. A-priori tests confirm that the similarity- and mixed-type models are superior to those developed based purely on eddy-viscosity assumption. However, some of the eddy-viscosity models still perform adequately in a-posteriori tests. Overall, dynamic models show reasonably good agreement with the DNS data.

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