A Compressible Formulation of the Active Model Split (AMS) Hybrid RANS/LES Model[1] CLARK PEDERSON, TODD OLIVER, ROBERT MOSER, The University of Texas at Austin — Hybrid RANS/LES models show promise for accurate prediction of flows with large-scale unsteadiness, such as separated flow. However, the predictive accuracy of typical hybrid models is limited by several shortcomings, such as modeled-stress depletion and a dependence on scalar grid measures. The "active model-split" (AMS) hybrid RANS/LES model was developed to address these shortcomings. In this model, the mean and fluctuating portions of the stress are modeled separately; this allows for a consistent treatment of the mean flow even in the presence of resolved fluctuations. The AMS has previously shown improved accuracy in several incompressible test cases. In this presentation, a compressible extension of the AMS is outlined. Models are presented for the additional closures needed, and the accuracies of various alternative models are compared. Hybrid RANS/LES modeling concerns specific to compressible flows are also addressed. Results are shown for both transonic and supersonic test cases.

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