Abstract Submitted
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A Stabilized Scale-Similarity Model for Explicitly-Filtered LES[1] AYABOE EDOH, ANN KARAGOZIAN, UCLA, VENKATESWARAN SANKARAN, Air Force Research Laboratory — Accurate simulation of the filtered-scales in LES is affected by the competing presence of modeling and discretization errors[2]. In order to properly assess modeling techniques, it is imperative to minimize the influence of the numerical scheme. The current investigation considers the inclusion of resolved and un-resolved sub-filter stress ([U]RSFS) components in the governing equations[3], which is suggestive of a mixed-model approach. Taylor-series expansions of discrete filter stencils are used to inform proper scaling of a Scale-Similarity model representation of the RSFS term[4], and accompanying stabilization is provided by tunable and scale-discriminant filter-based artificial dissipation techniques[5] that represent the URSFS term implicitly. Effective removal of numerical error from the LES solution is studied with respect to the 1D Burgers equation with synthetic turbulence, and extension to 3D Navier-Stokes system computations is motivated.

[1]Distribution A: Approved for public release, distribution unlimited. Supported by AFOSR (PMs: Drs. Chiping Li and Michael Kendra)
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[4]Pruett *et al.*, **Phys. of Fluids**, 13, 2578-2589 (2001)
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