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Large Eddy simulation of compressible flows with a low-numerical dissipation patch-based adaptive mesh refinement method CARLOS PANTANO, RALF DEITERDING, DAVID HILL, DALE PULLIN, Caltech — We describe a hybrid finite difference method for large-eddy simulation (LES) of compressible flows with a low-numerical dissipation scheme and structured adaptive mesh refinement (SAMR). Numerical experiments and validation calculations are presented including a turbulent jet and the strongly shock-driven mixing of a Richtmyer-Meshkov instability. The approach is a conservative flux-based SAMR formulation and as such, it utilizes refinement to computational advantage. The numerical method for the resolved scale terms encompasses the cases of scheme alternation and internal mesh interfaces resulting from SAMR. An explicit centered scheme that is consistent with a skew-symmetric finite difference formulation is used in turbulent flow regions while a weighted essentially non-oscillatory (WENO) scheme is employed to capture shocks. The subgrid stresses and transports are calculated by means of the streched-vortex model, Misra & Pullin (1997)

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