

Abstract Submitted
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Assessment of effective numerical bandwidth in simulations of compressible turbulence¹ JOHAN LARSSON, ANKIT BHAGATWALA, SANTHOSH SHANKAR, SANJIVA LELE, PARVIZ MOIN, Stanford University — The accuracy of different numerical methods suitable for compressible turbulence calculations including shockwaves is assessed. Methods studied include WENO, compact differencing/filtering, hyperviscosity regularization, and central differencing on split convective forms. Two test cases are used: the essentially incompressible Taylor-Green vortex and isotropic decaying turbulence with shocklets. Results on coarse grids are compared to finer grid reference solutions, and particular emphasis is placed on the effective bandwidth of the methods, i.e. the range of well resolved wavenumbers. The effect of the different forms of regularization on the effective bandwidth is quantified and discussed.

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