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A Finite–Volume Method for LES of Compressible Flows on Unstructured Grids KRISHNAN MAHESH, NOMA PARK, University of Minnesota — A non–dissipative, cell–centered, finite–volume method for large–eddy simulation of compressible flows on unstructured grids is proposed. Approaches to flux reconstruction, shock-capturing, and subgrid scale modeling are discussed. The flux reconstruction seeks good modified wave-number behavior along with robustness. Least–square error minimization along with truncated Taylor–series expansion up to quadratic terms, is used for both convective and viscous terms. Singular value decomposition is used to solve problems caused by 'bad' cells. Shock–capturing is performed by a corrector step which uses a characteristic–based filter. A local sensor is used to localize numerical dissipation. The dynamic Smagorinsky model is used for the subgrid terms.The grid–to–test filter width ratio is treated as being variable to achieve insensitivity of the dynamic constant to the shape and width of test filter. Results from various numerical tests ranging from isotropic turbulence to shock/turbulence interaction will be presented.

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