A New Type of Finite Volume WENO Schemes on Triangular Meshes

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In this presentation, we design a new type of high order finite volume weighted essentially non-oscillatory (WENO) schemes to solve hyperbolic conservation laws on triangular meshes. The main advantages of these schemes are their compactness, robustness and could maintain good convergence property for some steady state problems. Comparing with the classical finite volume WENO schemes, the optimal linear weights are independent of the topological structure of the triangular meshes and can be any positive numbers with one requirement that their summation is one. And it is the first time to obtain any high order accuracy with the usage of only five unequal sized stencils in spatial reconstruction methodology on triangular meshes. Extensive numerical results are provided to illustrate the good performance of such new finite volume WENO schemes.