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High Order Weighted ENO Schemes for Unstructured Meshes

Weighted Essentially Non-Oscillatory (WENO) schemes are extensions of Essentially Non-Oscillatory (ENO) schemes for solving hyperbolic conservation laws and other convection dominated problems. WENO improves upon ENO in using a convex combination of all possible stencils but with nonlinear weights depending upon the smoothness of the solution in each stencil. We discuss our recent work in constructing third and fourth order WENO schemes on a general triangulation. The improvement over previous attempts in designing WENO schemes for triangles includes higher order accuracy than ENO using the same stencil family, which is one important aspect of WENO philosophy in reducing costs. Numerical results are shown to illustrate the effect of the schemes.