

A simple and efficient WENO method for hyperbolic conservation laws

Jianxian Qiu

School of Mathematical Sciences, Xiamen University, China

Email: jxqiu@xmu.edu.cn

In this presentation, we present a simple high order weighted essentially non-oscillatory (WENO) schemes to solve hyperbolic conservation laws. The main advantages of these schemes presented in the paper are their compactness, robustness and could maintain good convergence property for solving steady state problems. Comparing with the classical WENO schemes by {*G.-S. Jiang and C.-W. Shu, J. Comput. Phys., 126 (1996), 202-228*}, there are two major advantages of the new WENO schemes. The first, the associated optimal linear weights are independent on topological structure of meshes, can be any positive numbers with only requirement that their summation equals to one, and the second is that the new scheme is more compact and efficient than the scheme by Jiang and Shu. Extensive numerical results are provided to illustrate the good performance of these new WENO schemes.