

عنوان مقاله:

The comparison of two high-order semi-discrete central schemes for solving hyperbolic conservation laws

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نویسنده:

Rooholah Abedian - *University of Tehran, Faculty of Engineering, Department of Engineering Science*

خلاصه مقاله:

This work presents two high-order, semi-discrete, central-upwind schemes for computing approximate solutions of 1D systems of conservation laws. We propose a central weighted essentially non-oscillatory (CWENO) reconstruction, also we apply a fourth-order reconstruction proposed by Peer et al., and afterwards, we combine these reconstructions with a semi-discrete central-upwind numerical flux and the third-order TVD Runge-Kutta method. Also this paper compares the numerical results of these two methods. Afterwards, we are interested in the behavior of the total variation (TV) of the approximate solution obtained with these schemes. We test these schemes on both scalar and gas dynamics problems. Numerical results confirm that the new schemes are non-oscillatory and yield sharp results when solving profiles with discontinuities. We also observe that the total variation of computed solutions is close to the total variation of the exact solution or a reference solution.

کلمات کلیدی:

CWENO technique, Central-Upwind schemes, Hyperbolic conservation laws, Total variation

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