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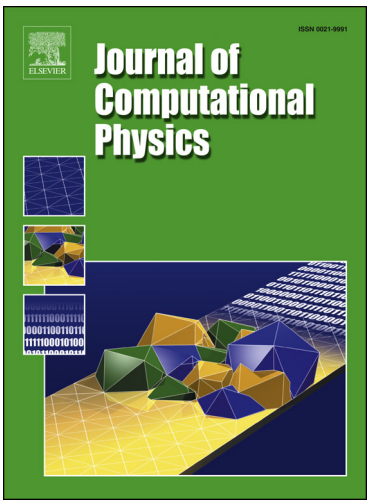

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ABSTRACT

We introduce a new troubled-cell indicator for the discontinuous Galerkin (DG) methods for solving hyperbolic conservation laws. This indicator can be defined on unstructured meshes for high order DG methods and depends only on data from the target cell and its immediate neighbors. It is able to identify shocks without PDE sensitive parameters to tune. Extensive one- and two-dimensional simulations on the hyperbolic systems of Euler equations indicate the good performance of this new troubled-cell indicator coupled with a simple minmod-type TVD limiter for the Runge-Kutta DG (RKDG) methods.

Key Words: discontinuous Galerkin method, limiters, troubled-cell indicator, high order accuracy

AMS(MOS) subject classification: 65M60, 65M99, 35L65, 35L67

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