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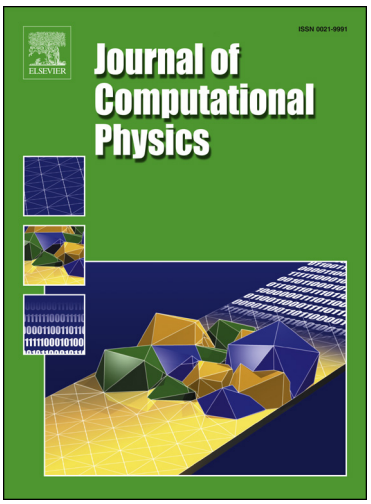


From hyperbolic diffusion scheme to gradient method: Implicit Green–Gauss gradients for unstructured grids

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## Highlights

- A gradient algorithm is derived from a hyperbolic diffusion scheme.
- The derived implicit Green-Gauss method is exact for linear functions on arbitrary grids.
- Fourth-order accuracy is achieved on rectangular-cell grids through the boundary.
- Excellent accuracy demonstrated for highly-curved thin grids.
- Per-iteration cost is comparable to that of a least-squares method.
- Discontinuity capturing with smoothed gradients.

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