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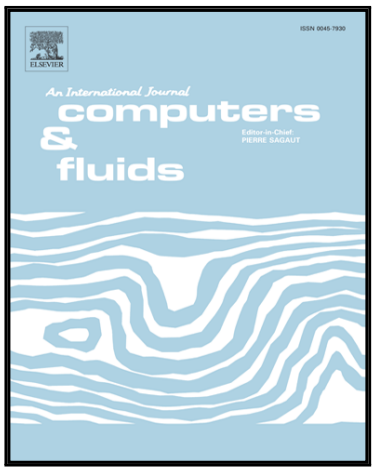

A cure for numerical shock instability in HLLC Riemann solver using antidiffusion control

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Highlights

- A shock instablity free variant of HLLC scheme that retains linear wave accuracy.
- HLLC scheme is recast as a diffusive HLL term plus an antidiffusive term.
- Antidiffusive terms in discrete transverse fluxes at shock found to trigger instability.
- Critical antidiffusive terms are controlled using a pressure based shock sensor.
- Robustness and accuracy of the scheme is demonstrated on several numerical examples.

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