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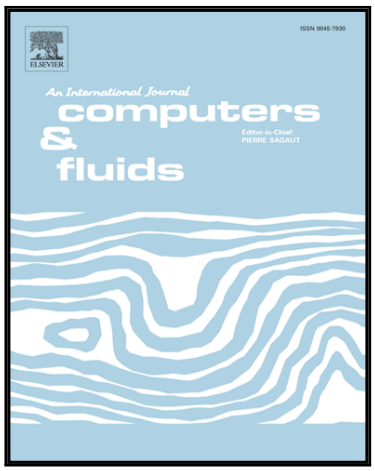

An improved time-splitting method for simulating natural convection heat transfer in a square cavity by Legendre spectral element approximation

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Highlights

- An improved time-splitting method for the natural convection heat transfer problem.
- Divergence-free velocity and only one auxiliary variable of vorticity.
- Results of benchmark quality for natural convection in a square cavity at $Ra=10^3$-10^6.
- Simulations and analysis for the natural convection in a square cavity with heat sources.

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