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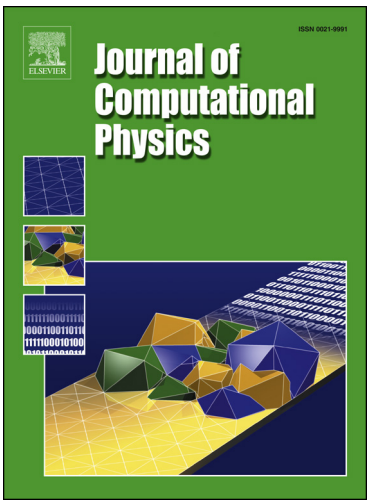

Dimensional Scaling and Numerical Similarity in Hyperbolic Method for Diffusion

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Highlights

- Hyperbolic diffusion models strongly depends on the grid unit unless scaled properly.
- Relaxation length must be scaled by a reference length for dimensional consistency.
- Non-dimensionalized relaxation length must be given an optimal value for superior convergence.
- A practical formula is derived for a reference length that makes $(2\pi)^{-1}$ an optimal value.
- Scale-invariant computations are demonstrated for steady/unsteady heat conduction problems.