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A linearly implicit global energy preserving reduced-order model for cubic Hamiltonian systems

Content

We present a linearly implicit global energy preserving model reduction technique to reduce the computational cost of large-scale multi-symplectic PDEs with cubic invariants. The proposed technique is suitable for the long-time integration of reduced-order Hamiltonian systems. The proposed method is tested on the wave equation, Korteweg–de Vries equation and Camassa-Holm equation. The numerical results verify the preservation properties of the method, which yields stable reduced-order models.

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