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Adaptive model reduction technique for large-scale dynamical systems with frequency-dependent damping

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Highlights

- A transformation technique based on Taylor's theorem is introduced to treat the frequency-dependent shear modulus.
- An adaptive second-order Arnoldi method is applied for the reduction of the computational complexity of systems with frequency-dependent damping.
- A relative error indicator is developed to iteratively enrich the reduced model.
- The method allows for a significant computational speed-up for both unconstrained and constrained viscoelastic materials, using three of the most often used models for the frequency dependent shear modulus.