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Dynamic characteristic analysis of an electrostatically-actuated circular nanoplate subject to surface effects

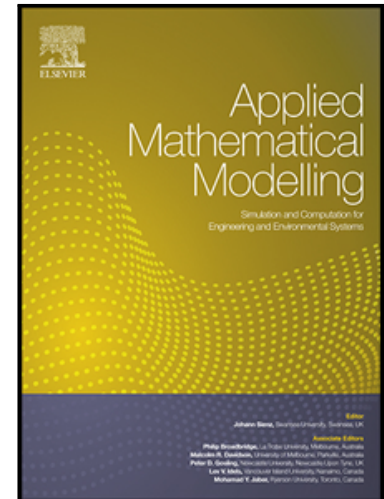
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**Highlights**

- The accuracy of hybrid scheme were found to be in good agreement with different numerical methods.
- Hybrid a differential transformation and finite differences is applied to solve the problems.
- The relationship between the thickness, radius, and gap of a circular nanoplate, and its voltage, is scale-dependent
- The influence of surface stress and surface elastic modulus on the pull-in voltage of circular nanoplate is studied.
- Surface effects is seen to have a significant role in determining the nonlinear dynamic behavior of circular NEMs.

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