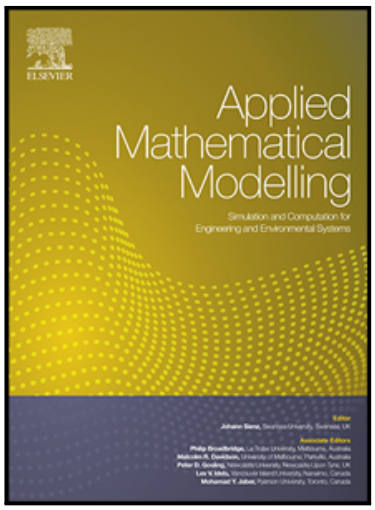

Nonlinear vibration analysis of a fractional dynamic model for the viscoelastic pipe conveying fluid

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Highlights

- A new non-linear, fractional dynamic model of the viscoelastic pipeis established.
- Analytical solutionsof the fractional model arederivedusingthemethodofmultiple scales.
- The amplitudepredicted bythe fractionalmodelis muchlarger than that predictedbythe previousmodel.
- With the fractional order increases, the nonlinear frequency increases at first and then diminishes.
- The fractional order can change the variation trend of theamplitude versusthe fluid velocity.