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On modeling beam-rigid-body microgyroscopes

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Highlights

- A comprehensive mathematical model of a beam-rigid-body gyroscope is introduced.
- The beam-rigid-body model (BRBM) is compared with the beam-mass model (BMM).
- The BRBM agrees with the 3D finite element analysis results while the BMM does not.
- The static and the dynamic responses are accurately computed using the new BRBM.
- Effective natural frequency and the pull-in voltage are correctly predicted using the BRBM.

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