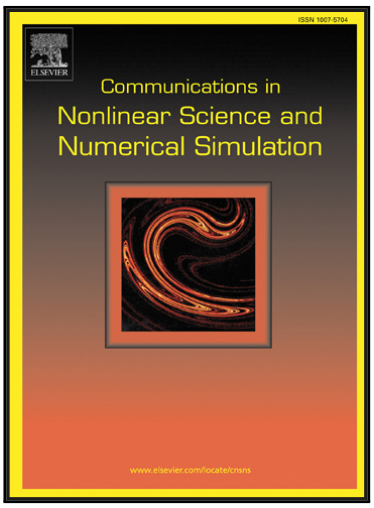

Effect of size on the chaotic behavior of nano resonators

Hamed Alemansour , Ehsan Maani Miandoab ,
Hossein Nejat Pishkenari

PII: S1007-5704(16)30319-7
DOI: 10.1016/j.cnsns.2016.09.010
Reference: CNSNS 3984

To appear in: *Communications in Nonlinear Science and Numerical Simulation*

Received date: 12 December 2014
Revised date: 10 September 2016
Accepted date: 15 September 2016

Please cite this article as: Hamed Alemansour , Ehsan Maani Miandoab , Hossein Nejat Pishkenari , Effect of size on the chaotic behavior of nano resonators, *Communications in Nonlinear Science and Numerical Simulation* (2016), doi: 10.1016/j.cnsns.2016.09.010

Highlights

- Strain gradient theory is utilized to model the MEMS resonator.
- A new accurate lumped model is proposed for the actuation force.
- An analytical inequality in terms of the system parameters is developed by the Melnikov's method to identify the chaotic region.
- Numerical simulations are performed in order to investigate the effect of size on the chaotic regions.
- Strain gradient theory predicts occurrence of chaos at much lower amplitudes than classical theory.