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خلاصه مقاله:

In this paper we develop a numerical procedure using finite element and augmented Lagrangian methods that simulates electro-mechanical pull-in states of both cantilever and fixed beams in microelectromechanical systems (MEMS) switches. We devise the augmented Lagrangian methods for the well-known Euler-Bernoulli beam equation which also takes into consideration of the fringing effect of electric field to allow a smooth transition of the electric field between center of a beam and edges of the beam. The numerical results obtained by the procedure are tabulated and compared with some existing results for beams in MEMS switches in literature. This procedure produces stable and accurate numerical results for simulation of these MEMS beams and can be a useful and efficient alternative for design and determining onset of pull-in for such devices.

کلمات کلیدی:

Microelectromechanical switch, Pull-in, Microbeam, Finite element solutions, Augmented Lagrangian methods

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