

## عنوان مقاله:

Pull-in behavior analysis of vibrating functionally graded micro-cantilevers under suddenly DC voltage

## محل انتشار:

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## خلاصه مقاله:

The present research attempts to explain dynamic pull-in instability of functionally graded microcantilevers actuated by step DC voltage while the fringing-field effect is taken into account in the vibrational equation of motion. By employing modern asymptotic approach namely Homotopy Perturbation Method with an auxiliary term, high-order frequency-amplitude relation is obtained, then the influences of material properties and actuation voltage on dynamic pull-in behavior are investigated. It is demonstrated that the auxiliary term in the homotopy perturbation method is extremely effective for higher order approximation and two terms in series expansions are sufficient to produce an acceptable solution. The strength of this analytical procedure is verified through comparison with numerical results

## کلمات کلیدی:

Micro-actuator, Functionally graded material, Dynamic Pull-in instability, Homotopy Perturbation Method with an auxiliary term

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/589161>

