

Colloquium

Bifurcation diagram of a Robin boundary value problem

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摘要：

We consider a parabolic problem with Robin boundary condition which arises when the edge of a micro-electro-mechanical-system (MEMS) device is connected with a flexible nonideal support. Then via a rigorous analysis we investigate the structure of the solution set of the corresponding steady-state problem. We show that a critical value (the pull-in voltage) exists so that the system has exactly two stationary solutions when the applied voltage is lower than this critical value, one stationary solution for applying this critical voltage, and no stationary solution above the critical voltage.

