Quenching phenomenon in an electrostatic micro-electromechanical system and its asymptotic property

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Abstract

In this paper, the asymptotic behavior of quenching solutions for quasilinear parabolic equa- tions with singular logarithm boundary flux arising in an electrostatic micro-electromechanical system (MEMS) is studied. Under certain assumptions for the initial data, the existence of quenching solutions, blowup phenomenon of time derivative, estimates of lower and upper bounds of quenching rate and asymptotic behavior of solutions near quenching time are studied theoretically and verified numerically.

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