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Switching Induced by Poisson Radio-Frequency Pulses in Nonlinear Micromechanical Oscillators JIE ZOU, SANAL BUVAEV, H.B. CHAN, Department of Physics, University of Florida, Gainesville, Florida 32611, USA — We study switching induced by Poisson radio-frequency (RF) pulses in nonlinear micromechanical oscillators. Under sufficiently large periodic excitation, nonlinear micromechanical oscillators possess multiple oscillation states with different amplitudes. The presence of noise enables the system to switch between these states. We find that in the vicinity of the bifurcation point the activation barrier, which is given by the logarithm of the switching rate, has a logarithmic dependence on the mean rate of Poisson RF pulses. Moreover, the measured dependence of the activation barrier on the distance to the saddle-node bifurcation η is consistent with predicted universal scaling relationships. While for white Gaussian noise the activation barrier shows a clean 3/2 power-law dependence on η, for modulated Poisson pulses the power-law has a different power of 1/2 with an additional logarithmic factor. Our measured critical exponents are in accordance with theoretical predictions.

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