

EFFECT OF EXTERNAL NOISE
ON THE RELAXATION PROCESS
IN BISTABLE TUNNELING SYSTEMS

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S u m m a r y

We consider the effects of intensity fluctuations of an incident electron flow incoming a double-barrier tunneling structure near an instability point. A simplified Langevin equation with multiplicative Gaussian white noise is used to describe noise effects in the system near a resonance under conditions of coherent tunneling. Numerically simulating this equation, we obtained the dependences of the mean first passage time on the noise intensity and a deviation of the average intensity of the incident electron flow from the critical value in the deterministic case. The numerical results satisfactorily agree with the theoretical results of Colet et al. The relaxation time has a maximum value in the absence of noise and decreases with increase in the noise intensity. Noise favors transitions at those incident intensities, for which the transition in the deterministic case was impossible.