

Abstract Submitted  
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**Critical fluctuations near the pitchfork bifurcations of period-doubling maps**<sup>1</sup> ANDREW NOBLE, University of California, Davis, SABA KARIMEDDINY, University of Massachusetts, Amherst, ALAN HASTINGS, University of California, Davis, JONATHAN MACHTA, University of Massachusetts, Amherst — Period-doubling maps, such as the logistic map, have been a subject of intense study in both physics and biology. The period-doubling route to chaos proceeds through a sequence of supercritical pitchfork bifurcations. Here, motivated by applications to population ecology, we investigate the asymptotic behavior of period-doubling bifurcations subject to environmental or demographic noise. We demonstrate, analytically, that fluctuations in the vicinity of each noisy pitchfork bifurcation are described by finite-size mean-field theory. Our results establish an exact correspondence between the bifurcations of far-from-equilibrium systems and the mean-field critical phenomena of equilibrium systems.

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