

Abstract Submitted  
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**Decoherence of a Driven Qubit**<sup>1</sup> JUN JING, University at Buffalo, and Shanghai University, PEIHAO HUANG, XUEDONG HU, University at Buffalo — We study the relaxation of a field-driven qubit. In particular, we find that driving, whether on resonance or off resonance, alters the qubit relaxation rate, allowing both a blue and a red sideband contribution. Depending on the reservoir spectral density and its frequency dependence, the qubit relaxation rate could either be accelerated or reduced. We apply our general theory to the example of an electron spin qubit that is driven by an electric field via electrically driven spin resonance (EDSR), and analyze how spin relaxation induced by charge noise during EDSR varies as a function of driving frequency, driving magnitude, spin-orbit coupling strengths, noise spectrum, and the applied field.

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