

Abstract Submitted  
for the MAR09 Meeting of  
The American Physical Society

**Qubit decoherence due to a Josephson bifurcation amplifier trapped in one of**<sup>1</sup> FRANK WILHELM, IOANA SERBAN, University of Waterloo, MARK DYKMAN, Michigan State University — We investigate the relaxation of a superconducting flux qubit for the case when its detector, the Josephson bifurcation amplifier, remains latched in one of its two (meta)stable states. We observe a qualitatively different behavior for the two different attractors, and interpret the result as the combined effect of the amplitude of the detector's response to external driving and the effective curvature of the detector's basins of attraction in a rotating frame, in the proximity of the stable points. We address the question of the proper version of detailed balance for the qubit.

<sup>1</sup>Work supported in parts by NSERC and NSF

Frank Wilhelm  
University of Waterloo

Date submitted: 20 Nov 2008

Electronic form version 1.4