Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Parity switching and decoherence by quasiparticles in single-junction transmons[1] GIANLUIGI CATELANI, Forschungszentrum Juelich — Transmons are at present among the most coherent superconducting qubits, reaching quality factors of order 10^6 both in 3D and 2D architectures. These high quality factors enable detailed investigations of decoherence mechanisms. An intrinsic decoherence process originates from the coupling between the qubit degree of freedom and the quasiparticles that tunnel across Josephson junctions. In a transmon, tunneling of a single quasiparticle is associated with a change in parity. I will discuss the theory of the parity switching rate in single-junction transmons, compare it with recent measurements, and consider the role of parity switching in limiting the coherence time.

[1]Partial support by the EU under REA grant agreement CIG-618258 is acknowledged.

Gianluigi Catelani
Forschungszentrum Juelich

Date submitted: 15 Nov 2013 Electronic form version 1.4