



Quantum Computing, Control, and Communication

an International PhD Programme of Excellence held jointly at
TU-Munich, LMU-Munich, and Max-Planck Institute for Quantum Optics (MPQ)
<http://www.qccc.de>

QC³

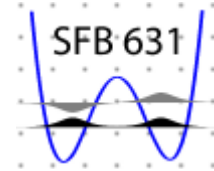
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Garching, 17th Dec. 2007

Invitation to a



Joint Lecture by SFB 631 and the QCCC PhD Programme
Thursday December 20th at 10 a.m.,
Walther Meissner Institute, Seminar Room 1st floor

Superconducting Nanocircuits: A Quantum Physics Playground

by
Prof. Frank Wilhelm,
Institute for Quantum Computation (IQC), Waterloo

Guests are welcome.

Motivated by quantum computing, superconducting nanocircuits have proven a range of quantum phenomena in a macroscopic and engineered setting. I will illustrate two recent, distinct examples of this program. The first example is dynamical tunneling, which occurs in systems without potential barriers between two states which coexist due to external driving in a weakly nonlinear Duffing oscillator. This phenomenon competes with activation over a quasi-energy barrier, which takes place at an effective temperature enhanced by the driving [1]. The second example is the realization of high fidelity-quantum gates under non-Markovian decoherence induced by a two-level fluctuator [2].

[1] I. Serban and F.K. Wilhelm, *Phys. Rev. Lett.* **99**, 137001 (2007) .

[2] P. Rebentrost, I. Serban, T. Schulte-Herbrüggen, and F.K. Wilhelm, quant-ph/0612165

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