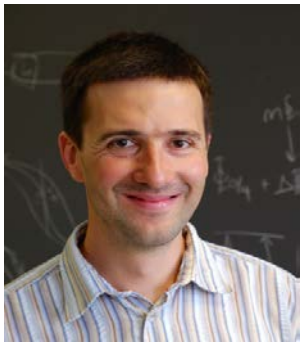
SFB 767
Seminar

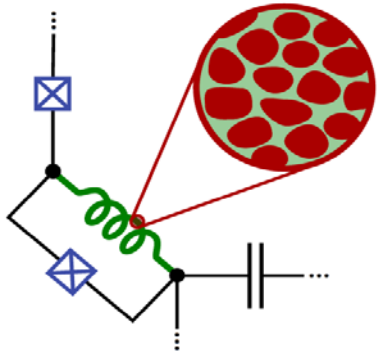
Universität Konstanz

Fr 18 Oct 2019
10:00
P 602



Dr. Ioan Pop

Karlsruhe Institute of Technology



Can we further reduce dissipation and dephasing in superconducting quantum oscillators?

Over the last decade we have witnessed a spectacular improvement in the understanding and mitigation of dissipation and dephasing in quantum microwave oscillators based on superconducting circuits. This evolution fueled the optimism of academic and industrial communities alike. Nevertheless, for fault-tolerant quantum computing machines we still require orders of magnitude of improvement in quantum coherence. I will present a few emerging research directions which I believe to be promising in providing the next breakthroughs in quantum hardware, and I will also put forward a few open questions. In particular, I will present the lessons learned over the last few years from using high impedance superconducting circuits [1,2,3].

[1] Circuit Quantum Electrodynamics of Granular Aluminum Resonators, N. Maleeva, et al. Nature Comm. 3889 (2018)
[2] Loss Mechanisms and Quasiparticle Dynamics in Superconducting Microwave Resonators Made of Thin-Film Granular Aluminum, L. Grunhaupt, et al. Phys. Rev. Lett. 121, 117001 (2018)
[3] Granular Aluminum as a Superconducting Material for High-Impedance Quantum Circuits, L. Grunhaupt, M. Spiecker, et al. Nature Materials 18, 816-819 (2019)

Contact:
G. Rastelli, 3802

SFB 767