

Colloquium

Thursday, September 19th at 2 pm

Prof. Dr. Joachim Ankerhold – University of Ulm

Josephson Photonics: New sources for quantum microwaves

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Quantum microwaves are an important building block of future quantum technologies. However, in contrast to optical light, they are rather difficult to produce and they are rather difficult to detect. In the last years in extending set-ups of circuit quantum electrodynamics (cQED), platforms combining Josephson junctions and microwave cavities have turned out as versatile, remarkably simple, and very bright sources for non-classical light such as anti-bunched and entangled microwave photons [1,2] (Josephson photonics). From a theoretical point of view, this class of systems reveals a wealth of nonlinear quantum physics far from equilibrium including dynamical transitions, number squeezing, or multi-photon resonances. In this talk, I will provide the experimental and theoretical background, discuss specific examples [3,4] and future developments.

[1] Phys. Rev. Lett. 106, 217005 (2011)

[2] Phys. Rev. Lett. 111, 247002 (2013)

[3] Phys. Rev. Lett. 119, 137001 (2017)

[4] Phys. Rev. Lett. 122, 186804 (2019)

