



Physical Sciences Seminar

Hybrid quantum systems based on collective excitations in solid

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Host: Johannes Fink

Superconducting qubits have proven to be an excellent tool for quantum state control and measurement in the microwave domain. We construct hybrid quantum systems combining superconducting quantum circuits and other collective excitations in solid-state devices. The examples include photons in microwave resonators and transmission lines [1], magnons in ferromagnetic crystals [2] and phonons in surface acoustic wave resonators [3]. The nonlinearity of superconducting qubits allows manipulation and readout of those excitations in the quantum limit. Such hybrid systems could be used as quantum transducers between different quantum information media.[1] S. Kono et al. Nature Phys. 14, 546 (2018).[2] D. Lachance-Quirion et al. Sci. Adv. 3, e1603150 (2017).[3] A. Noguchi et al. Phys. Rev. Lett. 119, 180505 (2017).[4] A. Noguchi et al. arXiv:1808.03372.

Monday, October 1, 2018 02:00pm - 03:00pm

IST Austria Campus Big Seminar room Ground floor / Office Bldg West (I21.EG.101)



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