

Physikalisches Kolloquium

Frank Wilhelm-Mauch, Universität des Saarlandes
»Physics and applications of quantum processors«

Einführung: A. Shnirman

Quantum computing promises to create a platform harnessing the complexity of quantum mechanics that can qualitatively outperform classical computers. Superconducting integrated circuits in particular have come a long way in mastering physical obstacles in their development by increasing quantum coherence, control and complexity. I will review their basic principles functionality and describe the state of the art including the approach to fault-tolerant computing. I will give an outlook on the path towards „quantum supremacy“ - the point at which a quantum computer cannot be simulated any more by a classical supercomputer - currently at about 50 quantum bits, which Josephson computers could be able to reach soon. In the end I will outline first disruptive applications of such devices in the simulation of quantum systems, including strongly correlated matter and molecules.

Freitag, 28.10.2016, 15:45 Uhr,

**KIT, Campus Süd,
Otto-Lehmann-Hörsaal, Physik-Flachbau (Geb. 30.22).
Anschließend Nachsitzung im Gastdozentenhaus „Heinrich Hertz“**