

Martin Weides

(Physics Department, UC Santa Barbara, USA)

Microbridge junctions for superconducting phase qubits

Josephson junctions for superconducting circuits such as SQUIDs and qubits are conventionally based on Al-AIOx-Al multilayer technology, which has two-level-fluctuators in the amorphous dielectric AIOx as a limiting decoherence source.

Replacing the tunnel junction with a nano-structured microbridge junction based on a hardly oxidizable metal, e.g. rhenium, is a promising alternative to reduce the intrinsic noise level. Being capacitively shunted, the microbridge junction's cubic potential allows for the operation as a phase qubit and to use its quantum limited energy resolution as a sensor for residual electronic fluctuations.

In this talk, the potential and limitations of microbridge junctions as active elements in superconducting circuits will be discussed, and transport measurements on microbridge junctions, structured with Focus Ion Beam and Electron Beam Lithography, will be presented.

10. Juni 2010, 13:15 Uhr

Universität Tübingen, Raum D4 A19
Auf der Morgenstelle 14, 72076 Tübingen

