SFB 631

Festkörperbasierte Quanteninformationsverarbeitung

TECHNISCHE UNIVERSITÄT MÜNCHEN

Seminar Announcement

Location Walther-Meissner-Institut
Seminarraum 143

Time Mittwoch, 24.09.2003
13:30 Uhr st

Speaker Frank Deppe
NTT Basic Research Laboratories, Atsugi, Japan

Title Determination of the Capacitance of nm-Scale Josephson Junctions

Abstract Superconducting three-Josephson-junction qubits are possible candidates for the basic elements of a (future) scalable quantum computer. An important design parameter is the capacitance of their Josephson junctions. We estimate the capacitance per junction area (specific capacitance) of junctions typically used in 3JFQBs with 0.5 nm oxide layers. The capacitance is obtained by analysing resonant voltage steps in the current-voltage characteristics of specifically designed SQUIDs The junction area is deduced from SEM images. We find that the specific capacitance of our junctions is about 100 fF/nm^2. Finally we compare this result to capacitance estimates from 3JFQB microwave spectroscopy and find that the SQUID resonance method provides at least a two times higher accuracy

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