



## Kolloquium

**Prof. Gianni Blatter**  
(ETH-Zürich)

### Superconducting Devices for Quantum Computing

Superconducting quantum devices exploit the phase/flux degree of freedom in a loop or the conjugate charge degree of freedom of an island for the implementation of a quantum two-level system. The central element in this type of qubit are the Josephson junctions — their smallness boosts the capacitive energy scale and thereby transforms the classical phase variable in a macroscopic superconducting device into a fluctuating quantum object. During the past five years, both charge- and phase/flux based quantum devices have been successfully implemented and tested, reaching quality factors in the range  $10^4$  –  $10^5$  meanwhile. I will review the functionality and basic as well as advanced design elements of superconducting quantum bits, discuss particular aspects of decoherence in such devices and present new ideas of applications outside the demanding arena of quantum computation.

**Wann?** Donnerstag, 26.01.2006, 17:15 Uhr

**Wo?** Universität Tübingen, Hörsaalzentrum  
auf der Morgenstelle, Raum N1