Sonderforschungsbereich 689
Spinphänomene in reduzierten Dimensionen

Seminarankündigung
Sondertermin

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Thema: Non-Equilibrium Restoration of Duality Symmetry

Abstract

"The magnetic field driven, superconductor to insulator transition (SIT) in thin films was theoretically analyzed via a vortex-charge duality transformation applied to the Hamiltonian [1]. Vortices condensation was conjectured as the underline physical mechanism of the insulating phase. Experimental evidence which followed supported duality-symmetry, but, also showed its low temperature breakdown [2]. Together with the appearance of deviations from duality symmetry, strongly nonlinear current-voltage characteristics also develop in the insulating phase. Applying a bias voltage above a well-defined V=Vth, results in a discontinuous increase, of several orders of magnitude, in current and a new low resistive insulating state. In this talk I'll establish a connection between the breakdown of duality symmetry and the development of these unusual current-voltage characteristics. I will show that duality symmetry is effectively restored by voltage-driving the system into the non-equilibrium state beyond Vth.


Ansprechpartner: C. Strunk