

# Kolloquium

## Theoretische Physik

Mo 13.11.17  
13:30 Uhr  
P 603



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### **Normal modes of phase oscillations in inhomogeneous one-dimensional superconductors**

The lowest-energy excitations in one-dimensional superconductors, such as thin superconducting wires or Josephson junction chains, are small oscillations of the superconducting phase that can propagate along the chain. The subject of the talk is the effect of a long-range spatial inhomogeneity in the wire/chain on the normal modes of phase oscillations, as well as various consequences of such effect. First, I will discuss Anderson localization of the normal modes in a disordered Josephson junction chain. Then, I will turn to situations when spatial modulation of chain parameters is introduced on purpose in the fabrication process. For such superconducting metamaterials, I will discuss the effect of a weak periodic spatial modulation of the system parameters on (i) Josephson energy renormalization by coupling to normal modes, and (ii) quantum phase slips in the wire/chain.