



Walther-Meißner-Institut

Bayerische Akademie der Wissenschaften



Walther-Meißner-Seminar

Walther-Meißner-Institut, Seminar Room 143

Date: **Special date: Tuesday, 14 August 2018, 11:00 h**

Speaker: **Qi-Ming Chen**

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Title: **Wiener meets Schrödinger**

Abstract:

Cybernetics (Control Science) is an ancient study of regulating a general system at one's will with technology. As a novel concept, quantum mechanics brings a new platform to this study but also challenges to the conventional ideas. In this talk, I will introduce our recent efforts at the intersection of cybernetics and quantum mechanics. The first part reports the preparation of a Bell state in NMR with fidelity 0.990 close to the shortest possible time, which is a direct application of optimal control methods in the quantum system. The second part introduces a theoretical study in superconducting circuits, in which we couple an ensemble of qubits and use the collective states to control the coupling strength between two microwave resonators. As a continuation of this work, we also studied how to make a high-Q superconducting resonator by using optimization algorithms.