

**Freitag 17.12. 14:15 Physikhochhaus Raum 915**

**Alexey Ponomarev (Uni Augsburg)**

**Thermal equilibration between two quantum systems**

Abstract:

The derivation of thermodynamic phenomena from deterministic time-reversible dynamics is one of the ultimate goals of theoretical physics. I will shortly review a new wave of activity in the quantum domain, where the thermalization conundrum has been studied either with a single isolated system, or with the system of interest coupled to a giant quantum bath, or, in the extreme, to the rest of the Universe. Then I will demonstrate that two identical finite quantum systems prepared initially at different temperatures, isolated from the environment, and subsequently brought into contact relax towards Gibbs-like quasi-equilibrium states with a common temperature and small fluctuations around the time-averaged expectation values of generic observables. Moreover, the temporal thermalization process proceeds via a chain of intermediate Gibbs-like states. I will discuss the conditions under which this scenario occurs and illustrate the quantum equilibration with two different models.