

Speaker: Uwe Holm, University of Freiburg
Title: Relaxation dynamics in an isolated two-body quantum system
Date: Friday, December 5th, 11:00 am (s.t.).
Place: Seminar room 915

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In classical thermodynamics, heat flow is commonly introduced by a thought experiment that employs two gas-filled boxes separated by a fixed wall and initially prepared with different internal energies. Subsequently, the subsystems exchange energy irreversibly, and the internal energies of both boxes equilibrate.

In this talk, an analogue microscopic model is introduced, which consists of two quantum particles contained in two 2D boxes separated by a fixed wall, isolated against the outside world and initially prepared in a product state. Thermal contact is realized by suddenly switching on Coulomb-like interactions between the particles in the adjacent boxes. With the help of numerical simulations of the resulting, generally non-integrable two-body dynamics, the questions of whether relaxation can be witnessed already in this very minimalist setting, and whether heat, entropy and temperature can be defined consistently are addressed.