



Guest lecture by

Prof. Dr. Volker Bach

TU Braunschweig

Flow Equations for Operators

Friday, June 12th, 2015 - 17.15 h

University of Tübingen,

Auf der Morgenstelle, Room N14

A basic problem in theoretical physics is the determination of the ground state energy $E_{\text{gs}} := \inf \sigma(H)$ and the corresponding eigenvector(s) $\Psi_0 \in \mathcal{H}$ of a given physical system defined by a self-adjoint Hamiltonian operator H that acts on the Hilbert space \mathcal{H} of physical states (wave functions), or better yet, the diagonalized form \tilde{H} of the Hamiltonian together with the unitary U that implements the diagonalization, $\tilde{H} = UHU^*$.

The lecture reviews progress on the solution of this problem by (continuous) flows, focussing on two methods:

* The Brockett-Wegner diagonalizing flow for matrices and operators and its application to quadratic operators will be discussed.

* The Renormalization Group flow based on the isospectral Feshbach-Schur map that has been used to construct ground states of, e.g., atoms that interact with photons, will be described, as well.

