Spectral Theory and Dynamics of Quantum Systems

GRADUIERTENKOLLEG 1838

Stuttgart-Tübinger Doktorandenseminar

4. Dezember 2015

Universität Tübingen, Auf der Morgenstelle 10, 72074 Tübingen

Doktorandenseminar: N9 im Hörsaalzentrum (Auf der Morgenstelle 16)
Kolloquium: Raum N14

Programm	
14.00 – 14.25	**Dr. Martin Könenberg:** Completely positive dynamical semigroups and quantum resonance theory
14.30 – 14.55	**Bartosch Ruszkowski:** Melas-type bounds for the Laplacian with magnetic field on bounded domains
15.00 – 15.25	**Dr. Domenico Monaco:** Topology vs Localization in Periodic Media
15.30 – 16.00	**Julian Schmidt:** Particle creation via boundary conditions on Fock space
Kaffeepause	
16.30	**Mathematisches Kolloquium**
ab 17.30	**Nachsitzung**

Mathematisches Kolloquium:

Derivation of the Vlasov equation
Prof. Peter Pickl (LMU München)

ABSTRACT: Solving the evolution equation for an interacting N-particle system analytically or numerically is, in many cases, very difficult or even impossible. However, there are situations where the correlations between the particles are negligible. In many such cases it is possible to give an effective one-particle descriptions which explains most of the physics, and to proof the validity of this effective description with mathematical rigor when N goes to infinity ("derive the equation").

One of the most basic systems one can think of is the dynamics of N stars forming a galaxy, interacting via gravitation. The effective one particle description one expects to be valid is the Vlasov equation. Deriving the Vlasov equation for this system is, however, still an open problem: the technical difficulty comes from the singularity of the interaction. In the talk I will present recent results where the interaction is slightly changed by an N-dependent cutoff.

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