



Spectral Theory and Dynamics of Quantum Systems

GRADUIERTENKOLLEG 1838

Stuttgart-Tübinger Doktorandenseminar

25. April 2016

Universität Stuttgart, Campus Vaihingen, Pfaffenwaldring 57

Raum 8.122

Programm	
14.00 – 14.25	Hanna Walach: Discretized dynamical low-rank approximation in the presence of small singular values
14.30 – 14.55	Sebastian Stegmüller: Validity of the Rotating Wave Approximation in cavity QED
15.00 – 15.25	Wolfgang Gaim: Semiclassical Approximations of Expectation Values for Hamiltonians with Operator-Valued Symbols
15.30 – 16.00	Johanna Richter: Eigenvalue Bounds for Schrödinger and Stark Operators with Complex Potentials
Kaffeepause	
16.30	Mathematisches Kolloquium
ab 17.30	Nachsitzung

Mathematisches Kolloquium:

The Ginzburg - Landau equations: from physics to geometry

Prof. Israel Michael Sigal (University of Toronto)

ABSTRACT: The Ginzburg - Landau equations were first developed to understand macroscopic behaviour of superconductors; later, together with their non-Abelian generalizations - the Yang-Mills-Higgs equations - they became a key part of the standard model in elementary particle physics. They also have found important applications in geometry and topology.

These equations have remarkable solutions - the magnetic vortex lattices. I will review the existence and stability theory of these solutions and how they relate to the modified theta functions appearing in number theory and algebraic geometry. Certain automorphic functions play a key role in the theory described in the talk. I will also describe the existence results for the Ginzburg - Landau equations on Riemann surfaces.