

Second Workshop on Topics in Spectral Theory

Organized by B. Helffer, T. Hoffmann-Ostenhof, A. Laptev

July 6 - 16, 2009

Tentative schedule

Monday, July 6**Opening : 14:00, Boltzmann lecture hall**

(Sometimes the Schrödinger lecture hall will be used)

Brian Davies, 14:30-15:20

Pencils, spectra and pseudospectra.

Eric Carlen, 15:40-16:30

Entropy production and spectral gaps for master equations of Kac type.

Tuesday, July 7**Leonid Friedlander, 10:00 - 10:50**

Heat trace on a polyhedron.

Nils Dencker, 11:20 - 12:10

The Pseudo spectra of Systems of Semiclassical Pseudodifferential Operators.

Lunch break: 12:10 - 14:30**Thomas Kappeler, 14:30 - 15:20**

From Toda to KdV (joint work with D. Bambusi, T. Paul).

Nicolas Raymond, 15:40 - 16:30

Asymptotic Analysis of the Landau-de Gennes Functional.

Wednesday, July 8**Jan Philip Solovej, 10:00 - 10:50**

A new method in the study of the thermodynamic limit of charged systems.

Maciej Zworski, 11:20 - 12:10

Probabilistic Weyl laws for quantized tori (joint work with T. J. Christiansen).

Lunch break: 12:10 - 14:30

Brian Davies, 14:30 - 15:20

Spectral Theory for highly non-self-adjoint operators.

Karel Pravda-Starov, 15:40 - 16:30

Semiclassical resolvent estimates for non-selfadjoint operators with double characteristics.

Thursday, July 9

Nicolas Lerner, 10:00 - 10:50

Coherent states methods for hypoelliptic operators.

Frédéric Hérau, 11:20 - 12:10

Subelliptic estimates for linearized kinetic equations and applications.

no talks on Thursday afternoon

Wine and eating in the evening

Friday, July 10

Leonid Parnowski, 10:00 - 10:50

Recent results on the spectrum for Schrödinger operators on the lattice.

Thomas Østergaard Sørensen, 11:20 - 12:10

The relativistic Scott correction for molecules.

Lunch break: 12:10 - 14:30

Michael Solomyak, 14:30 - 15:20

Counting bound states for Schrödinger operators on the lattice.

Ayman Kachmar, 15:40 - 16:30

On the Energy of Bound States for Magnetic Schrödinger operators.

Monday, July 13

Heinz Siedentop, 10:00 - 10:50

Stability of Relativistic Coulomb Systems.

Alexander Kiselev, 11:20 - 12:10

Nonlocal maximum principles for fluid dynamics.

Lunch break: 12:10 - 14:30

Farit Avkhadiiev, 14:30 - 15:20

Hardy type inequalities.

Tatyana Suslina, 15:40 - 16:30

Homogenization of nonstationary periodic equations.

Tuesday, July 14

Mikael Persson, 10:00 - 10:50

Strong diamagnetism for the ball in three dimensions.

Alexander Sobolev, 11:20 - 12:10

Szegö limit theorem for operators with discontinuous symbols: Widom's hypothesis.

Tuesday afternoon no talks, but time for informal discussions etc

Wednesday, July 15

Robert Seiringer, 10:00 - 10:50

Number of Bound States of Schrödinger operators with Matrix-Valued Potentials.

Rupert Frank: 11:20 - 12:10

Inversion positivity and the sharp Hardy-Littlewood-Sobolev inequality.

Lunch break: 12:10 - 14:30

Virginie Bonnaillie Noel, 14:30 - 15:20

Minimal and nodal partitions.

Susanna Terracini, 15:40 - 16:30

Spectral properties and uniqueness theorems for Aharonov-Bohm operators with a moving pole.

Thursday July, 16

Bernard Helffer, 10:00-10:50

On some spectral problems occurring in the analysis of the time-dependent Ginzburg-Landau equation (after Y. Almog and Almog-Helffer-Pan).

Ari Laptev, 11:20 -12:10

Inequalities for complex eigenvalues.

List of Participants

Lior Aermark July 5 - 20
Farit Avkhadiev July 6 - 23
Rafael Benguria July 16 - 30
Virginie Bonnaillie Noel July 5 - 27
Eric Carlen June 28 - July 12
Brian Davies July 4 - 11
Nils Dencker July 6 - 15
Laszlo Erdős July 5 - 7
Maria Esteban July 9 - 21
Søren Fournais July 6 - 10
Rupert Frank July 5 - 24
Leonid Friedlander July 5 - 25
Christian Hainzl July
Bernard Helffer June 29 - July 28
Frederic Herau July 5 - 20
Maria Hoffmann-Ostenhof July
Thomas Hoffmann-Ostenhof July
Ayman Kachmar July 6 - 16
Thomas Kappeler July 6 - 18
Alexander Kiselev July 6 - 16
Ari Laptev July 4 - 12, 15 - 21
Nicolas Lerner June 30 - July 10
Jimena Royo Letelier July 12 - 18
Michael Levitin July 5 - 15
Thomas Østergaard Sørensen July
Leonid Parnovski July 2 - 14
Mikael Persson July 6 - 16
Karel Pravda-Starov July 1 - 21
Nicolas Raymond July 6 - 10
Robert Seiringer July 5 - 24
Heinz Siedentop July 9 - 13
Alexander Sobolev July 7 - 25
Michael Solomyak July 2 - 23
Jan Philip Solovej 6 - 10
Tatyana Suslina July 5 - 19
Susanna Terracini July 13 - 17
Maciej Zworski July 6 - 12

First Workshop on Topics in Spectral Theory

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May 11 - 20, 2009

Opening: May 11, 14:00, Boltzmann lecture hall

E. Harrell, 14:30 - 15:20

Trace identities for spectra of Schrödinger operators and semiclassically sharp inequalities for eigenvalues.

M. van den Berg 15:40 - 16:30

Minimization of the second Dirichlet eigenvalue with a perimeter constraint.

R. Bañuelos, 11:20 - 12:10

Trace asymptotics for stable heat semigroups.

Lunch break: 12:10 - 14:30

N. Nadirashvili 14:30 - 15:20

Isoperimetric problems for the first eigenvalue.

B. Helffer, 15:40 - 16:30

On recent results and open problems on minimal partitions.

Wednesday, May 13

R. Shterenberg, 10:00 - 10:50

Asymptotic expansion of the integrated density of states of the two-dimensional periodic Schrödinger operator.

Y. Colin de Verdière, 11:20 - 12:10

An inverse semi-classical problem motivated by passive imaging in seismology.

Lunch break: 12:10 - 14:30

P. Freitas: 14:30 - 15:20

Approximating low eigenvalues of the Laplacian: analysis, geometry and numerics.

A. El Soufi, 15:40 - 16:30

Eigenvalues of the Laplace-Beltrami operator on manifolds.

Thursday, May 14

F. Truc, 10:00 - 10:50

Confining quantum particles with a purely magnetic field.

S. Fournais, 11:20-12:10

Superconductivity near the second critical field.

Lunch break: 12:10 - 14:30

Y. Kordyukov, 14:30 - 15:20

Semiclassical spectral asymptotics for a Schrödinger operator with hypersurface magnetic wells.

N. Raymond, 15:40 - 15:30

Upper bound for the lowest eigenvalue of the Neumann Laplacian with variable magnetic field.

Friday, May 15

H. Siedentop, 10:00 - 10:50

The Müller functional: asymptotic behaviour of the groundstate energy.

J.P. Solovej, 11:20 - 12:10

Atoms with self-generated magnetic fields

Lunch break: 12:10 - 14:30

I. Herbst, 14:30 - 15:20

Analyticity properties of solutions to the Navier-Stokes equations in \mathbb{R}^3 .

D. Mangoubi, 15:40 - 16:30

The Volume of a Local Nodal Domain.

Monday, May 18

A. Girouard, 10:00 - 10:50

Isoperimetric ratio, spectrum of hypersurfaces and Steklov spectrum.

G. Teschl, 11:20 - 12:10

Spectral theory for perturbed Krein Laplacians in non-smooth domains.

Lunch break: 12:10 - 14:30

M. Levitin, 14:30 - 15:20

A class of non-selfadjoint PT-symmetric periodic problems with real spectra.

D. Jakobson, 15:40 - 16:30

Estimates from below: spectral function, remainder in Weyl's law and resonances.

Tuesday, May 19

O. Safronov, 10:00 - 10:50

Absolutely continuous spectrum of Schrödinger operators with no bound states.

J. Polterovich, 11:20 - 12:10

Dynamical features and average growth of the spectral function.

Lunch break: 12:10 - 14:30

J. Holt, 14:30 - 15:20

A Generalization of the Simon-Spencer Theorem.

T. Østergaard Sørensen, 15:40 - 16:30

Regularity properties of atomic and molecular eigenfunctions and their associated densities.

Wednesday, May 20

B. Nazaret, 10:00 - 10:50

Entropies, diffusion equations and functional inequalities.

L. Hermi, 11:20 - 12:10

A Class of New Inequalities for the Eigenvalues of the Laplacian.

Lunch break: 12:10 - 14:30

R. Benguria, 14:30 - 15:20

Zeros of the Fourier Transform of the characteristic function of a domain and Dirichlet eigenvalues.

15:40 Session on open problems and further discussions.

Thursday, May 28

E. Harrell, 15:30 - 16:20

Optimization of functionals on convex domains.