

ESF-Workshop: Spectral Theory and Partial Differential Equations

December 10-21, 2007

Organizers: **Thomas Hoffmann-Ostenhof and Ari Laptev**

Participants: V. Bonnaillie-Noel 12-19, R. Bosi 10-21, J-M Combes 13-22, A. Dall'Acqua 12-21, J. Dolbeault 14-18, L. Druck (Administration) 14-17, A. Enblom 19-22, M. Esteban 13-18, P. Exner 14-15, R. Frank 14-20, P. Freitas 15-18, G. Friesecke 9-13, C. Hainzl 16-19, B. Helffer 12-16, R. Hempel 14-20, M. Hoffmann-Ostenhof (local), T. Hoffmann-Ostenhof (local), H. Knörrer 15-16, E. Korotyaev 10-21, A. Laptev 14-22, M. Levitin 8-20, M. Loss 14-19, A. Luger 17-21, C. Mabrouk (ESF) 15-16, S. Morozov 10-21, T. Østergaard Sørensen 10-21, A. Pushnitski 14-22, H. Siedentop 14-17, A. Sobolev 10-21, J.P. Solovej 12-16, S. Terracini 12-15, G. Teschl (local), J. Tidblom (local), M. van den Berg 14-19, T. Weidl 11-20, J. Yngvason (local)

The numbers after the names indicate dates of the day of arrival, respectively, departure.

The workshop is from December 10-21. But the talks will only be on December 13-19. On Saturday and Sunday there will be no talks. On Saturday afternoon the meeting of the steering committee of SPECT will be held. The days without talks are intended for discussions and collaborations. Talks will be given in the **Schrödinger lecture hall**.

Thursday, December 13

9:45 Opening.

10:00-10:45 **A. Sobolev**

Discrete spectrum distribution of the Landau operator by an expanding potential

10:45-11:30 break

11:30-12:15 **G. Friesecke**

The time-independent Schrödinger equation and stationarity of the particle density

12:15-14:15 break

14:15-15:00 **B. Helffer**

Spectral Theory in the theory of liquid crystals

15:15-16:00 **S. Terracini**

Partition problems

16:00-16:45 Break

16:45-17:30 **J. Yngvason**

On the rotating Bose gas

Friday, December 14

10:00-10:45 **J.P. Solovej**
The relativistic Scott correction

10:45-11:30 break

11:30-12:15 **M. Esteban**
Selfadjointness of not semibounded operators via Hardy-like inequalities

12:15-14:15 break

14:15-15:00 **R. Bosi**
Multipolar Hardy inequalities for Schrödinger and Dirac operators

15:00-15:45 **T. Østergaard Sørensen**
Analytic structure of Coulombic wave functions

15:45-16:30 break

16:30-17:15 **V. Bonnaillie-Noel**
Superconductivity in domains with corners

17:30-18:15 **E. Korotyaev**
Inverse problems for harmonic oscillators perturbed by a symmetric potential

Monday, December 17

10:00-10:45 **P. Freitas**
Eigenvalues of the Laplacian: geometric aspects, explicit expressions and numerics

10:45-11:30 break

11:30-12:15 **J. Dolbeault**
TBA

12:15-14:00 break

14:00-14:45 **JM Combes**
The spectral shift function for random Schrödinger operators

15:00-15:45 **H. Siedentop**
The relativistic Scott correction

Tuesday, December 18

10:00-10:45 **M. Loss**

The sharp constant in the Hardy-Sobolev-Maz'ya inequality

10:45-11:30 break

11:30-12:15 **A. Pushnitski**

The analogue of the the Birman-Krein formula in Hamiltonian Mechanics

12:15-14:15 break

14:15-15:00 **A. Dall'Acqua**

The clamped plate equation and positivity

15:15-16:00 **R. Frank**

Polya's conjecture in the presence of a magnetic field

16:00-16:45 break

16:45-17:30 **C. Hainzl**

On the spectral properties of the Bardeen-Cooper-Schrieffer functional in superfluidity

Reception at ESI

Wednesday, December 19

10:00-10:45 **M. Levitin**

Fourier transform, null variety and eigenvalues of Laplacians

10:45-11:30 break

11:30-12:15 **T. Weidl**

Logarithmic Lieb Thirring inequalities in dimension 2

12:15-14:15 break

14:15-15:00 **M. van den Berg**

On the heat equation with singular initial data

15:00-15:45 **G. Teschl**

A gentle introduction to non-linear steepest descent

15:45-16:30 break

16:30-17:15 **A. Laptev**

On some generalized Hardy-Sobolev type inequalities