DVR 0065528

# Recent Developments in the Mathematical Analysis of Large Systems

## October 1 - 6, 2012

## Organized by: Christian Hainzl, Robert Seiringer, Stefan Teufel

- **Monday, October 1, 2012**
  **9:00** Welcome and Registration
  **9:30 – 10:15:** Joel Lebowitz
  *Stationary Non-Equilibrium States: Some of the things I learned from Herbert*
  **10:20 – 10:45:** coffee break
  **10:45 – 11:30:** Wojciech De Roeck
  *Can thermal fluctuations cause many-body localization?*
  **11:35 – 12:20:** Stefano Olla
  *Macroscopic fluctuations of energy in chains of oscillators*
  **12:20 – 14:30:** lunch break
  **14:30 – 15:15:** Jani Lukkarinen
  *Kinetic theory of the Hubbard model: a Boltzmann equation with a twist*
  **15:20 – 16:05:** Patrik Ferrari
  *Free energy fluctuations for directed polymers in* $1+1$ *dimension*
  **16:10 – 16:45:** break
  **16:45 – 17:30:** Stefan Grosskinsky
  *Equilibration dynamics and metastability in inclusion processes*

- **Tuesday, October 2, 2012**
  **9:30 – 10:15:** Jakob Yngvason
  *Second thoughts on Entropy and the Second Law of Thermodynamics*
  **10:20 – 10:45:** coffee break
  **10:45 – 11:30:** George Hagedorn
  *A Simple Model for Molecular Raman Scattering*
  **11:35 – 12:20:** Mathieu Lewin
  *The excitation spectrum of interacting Bose gases*
  **12:20 – 14:30:** lunch break
  **14:30 – 15:15:** Jan Derezinski
  *General properties of Bogoliubov transformations*
  **15:20 – 16:05:** Simone Warzel
  *The Anderson model on the Hemming cube*
  **16:10 – 16:45:** break
  **16:45 – 17:30:** Max Lein
  *Effective Dynamics for Electromagnetic Waves Traveling in Slowly Modulated Photonic Crystals*

- **Wednesday, October 3, 2012**
  **9:30 – 10:15:** Michael Loss
  *The Kac Master Equation; a review*
  **10:20 – 10:45:** coffee break
  **10:45 – 11:30:** Alain Joye
  *Spectral Transition for Random Quantum Walks on Trees*
  **11:35 – 12:20:** Volker Betz
  *Effective density of states of a quantum oscillator coupled to a radiation field*
  **12:20 – 14:30:** lunch break
  **14:30 – 15:15:** Peter Pickl
  *Effective Dynamics of a Heavy Particle in an Ideal Bose Gas in the Thermodynamic Limit*
  **15:20 – 16:05:** Detlef Dürr
  *Quantum Physics not understandable? Surely You're Joking, Mr. Feynman!*
  **16:10 – 16:45:** break
  **16:45 – 17:30:** Joel Lebowitz
  *Human Rights Session*

- **Thursday, October 4, 2012**
  **9:30 – 10:15:** Bruno Nachtergaele
  *Quantum harmonic oscillator systems with disorder*
  **10:20 – 10:45:** coffee break
  **10:45 – 11:30:** Stephan De Bievre
  *Scattering induced diffusion and current in a tight binding band*
  **11:35 – 12:20:** Gianluca Panati
  *Localization of electrons charge in insulators and minimizers of the Marzari-Vanderbilt functional*
  **12:20 – 14:30:** lunch break
  **14:30 – 15:15:** Oliver Matte
  *On enhanced binding due to the quantized radiation field*
  **15:20 – 16:05:** Vojkan Jaksic
  *Non-equilibrium statistical mechanics of the spin-boson model*
  **16:10 – 16:45:** break
  **16:45 – 17:30:** Jan Philip Solovej
  *Solution to a conjecture on the classical entropy of quantum states*

- **Friday, October 5, 2012**
  **9:30 – 10:15:** Tomohiro Sasamoto
  *Replica analysis of surface growth models using quantum many-body systems in one-dimension*
  **10:20 – 10:45:** coffee break
  **10:45 – 11:30:** Benjamin Schlein
  *Dynamics of BEC of fermion pairs in the low density limit of BCS theory*
  **11:35 – 12:20:** Gerald Teschl
  *Lieb-Robinson Bounds for the Toda Lattice*
  **12:20 – 14:30:** lunch break
  **14:30 – 15:15:** Michael Sigal
  *Bounds on photon speed and asymptotic completeness of Rayleigh scattering*
  **15:20 – 16:05:** Dirk Deckert
  *Ultraviolet Properties of the Spinless, One-Particle Yukawa Model*
  **16:10 – 16:45:** break
  **16:45 – 17:30:** Alessandro Pizzo
  *Coulomb scattering in the massless Nelson model I. Foundations of two-electron scattering and regularity of ground states*

- **Saturday, October 6, 2012**
  **9:30 – 10:15:** Bernhard Baumgartner
  *Quantum dynamical processes, semigroups and structures of Hilbert space*
  **10:20 – 10:45:** break
  **10:45 – 11:30:** Daniel Ueltschi
  *Random loop representations for quantum Heisenberg models*
  **11:35 – 12:20:** Elliott Lieb
  *The 36 Year Old Saga of the BMV Conjecture*

**All lectures take place in the ESI Boltzmann Lecture Hall**