



DVR 0065528

Programme on

"Minimal Energy Point Sets, Lattices and Designs" September 29 - November 21, 2014:

organized by

Christine Bachoc (U Bordeaux), Peter Grabner (Graz U of Technology), Edward B. Saff (Vanderbilt U, Nashville), Achill Schürmann (U Rostock)

Workshop on

"Optimal Point Configurations and Applications"

October 13 - 17, 2014:

• Monday, October 13, 2014

09:00 – 09:30 Opening & Registration

09:30 – 10:30 **Ian Sloan** *QMC designs and covering of spheres by spherical caps*

10:30 – 11:00 coffee / tea break

11:00 – 11:30 **Johann Brauchart** *Covering and Separation for points on the sphere*

11:30 – 12:00 **Jordi Marzo** Uniformly bounded sets of orthonormal polynomials on the sphere

12:00 – 12:30 **Braxton Osting** Spectrally Optimized Point Set Configurations

12:30 - 15:00 lunch break

15:00 – 16:00 **Salvatore Torquato** Disordered Energy Minimizing Configurations

16:00 – 16:30 break

16:30 – 17:00 **Emmanuel Trizac** *The Wigner Crystal problem for charged bilayers*

17:00 – 17:30 Ladislav Šamaj Ground-state of charged particles between the walls with dielectric images

17:30 – 18:00 **Moritz Antlanger** *The asymmetric Wigner bilayer problem*

• Tuesday, October 14, 2014

09:00 – 10:00 **Peter Dragnev** Universal lower bounds for potential energy of spherical codes

10:00 – 10:30 *coffee / tea break*

10:30 – 11:00 **Carlos Beltrán** *Optimal distribution of heat sources in the sphere*

11:00 – 11:30 **Paul Leopardi** Discrepancy, separation and Riesz energy of finite point sets on compact connected Riemannian manifolds

11:30 – 12:00 **Kenneth Stolarsky** *Thinking Outside the Circle*

12:00 – 15:00 lunch break

15:00 – 16:00 **Sylvia Serfaty** Next order asymptotics of large systems with Coulomb and Riesz interactions

 $16{:}00-16{:}30\ break$

16:30 – 17:00 **Laurent Bétermin** Asymptotic expansion of logarithmic energy on the sphere

17:00 – 17:30 **Brian Simanek** *Periodic Discrete Energy*

17:30 – 18:00 **Yujian Su** *The Next-order Term for Minimal Periodic Riesz Energy Asymptotics*

• Wednesday, October 15, 2014

09:00 – 10:00 **Josef Dick** *Numerical integration on the sphere using quasi-Monte Carlos rules*

 $10{:}00-10{:}30\ coffee\ /\ tea\ break$

10:30 - 11:00 **Dmitriy Bilyk** The L^2 discrepancy of Fibonacci (and other) lattices

11:00 – 11:30 Lev Markhasin BMO and exponential Orlicz space estimates of the discrepancy function in arbitrary dimension

11:30 – 12:00 Mario Ullrich Frolov cubature in Besov spaces with mixed smoothness

12:00 – 13:00 **Henry Cohn** *Optimal simplices and codes in projective spaces*

18:30 Social Dinner at "Heurigen"

• Thursday, October 16, 2014

09:00 – 10:00 **Joe Ward** Local Bases on Spheres with Applications

10:00 - 10:30 coffee / tea break

10:30 – 11:00 **Francis Narcowich** A Zeros Lemma for Riemannian Manifolds

11:00 – 11:30 Yuguang Wang

Computation of isotropic random fields on spheres via needlets decomposition

11:30 – 12:00 **Khang Tran** *The root distribution of polynomials with a three-term recurrence*

12:00 - 14:00 lunch break

13:45 – 14:45 Salvatore Torquato

Reformulation of the Covering and Quantizer Problems as Ground States of Interacting Particles

14:45 - 15:00 break

15:00 – 16:00 **Florian Theil** *Periodic minimizers in three dimensions*

16:00 – 16:30 break

16:30 – 17:00 **David de Laat** *Energy minimization via moment hierachies*

17:00 – 17:30 **Paolo Piovano** *Wulff shape and isoperimetric characterization of crystals*

17:30 – 18:00 **Dmitriy Khavinson** Selected question for polynomials in one and several complex variables

• Friday, October 17, 2014

09:00 – 10:00 **Sergiy Borodachov** Asymptotic Results on the Discrete Riesz Minimal Energy and Polarization Problems when the Power of the Potential Equals the Dimension of the Conductor

10:00 – 10:30 coffee / tea break

10:30 – 11:00 **Natalia Zoriĭ** Minimum Riesz energy problems for a condenser with "touching plates"

11:00 – 11:30 **Robert Kusner** *Möbius energy of Hopf lins in* S^3 and Coulomb electrons on S^2

11:30 – 12:00 **Ulisse Stefanelli** *Carbon geometries as optimal configurations*

12:00 – 12:30 **Wei-Hsuan Yu** *Two-distance tight frames*

All talks take place at the ESI, Boltzmann Lecture Hall