16th Saint-Petersburg Conference *in* Spectral Theory and Mathematical Physics, dedicated to M. S. Birman

Euler Institute, St. Petersburg, Russia

June 23-27, 2025

CONFERENCE PROGRAM

Monday, June 23

- $09^{30} 09^{55}$ Registration
- $09^{55} 10^{00}$ **Opening**
- 10⁰⁰ 10⁴⁵ Andrey Piatnitski (UIT & MIPT) Homogenization of convolution type operators with heavy tails
- 10⁵⁰ 11³⁵ **Tatiana Suslina** (SPBSU) Homogenization of the Lévy-type operators with periodic coefficients

Coffee Break

12⁰⁰ – 12⁴⁵ **Sergei Nazarov** (IPME) Band-gap structure of the spectrum of the Dirichlet problem for the Lamè system in a double-periodic lattice of thin plates

12⁵⁰ – 13²⁰ **Vasiliy Kachalov** (NRU MPEI) On a spectral problem of nonlinear perturbation theory

Lunch

- 15⁰⁰ 15⁴⁵ **Denis Borisov** (IM UFRC RAS) On geometric approximations of point interactions for general two-dimensional and three-dimensional operators
- 15⁵⁰ 16³⁵ **Elena Zhizhina** (MIPT & UIT) Homogenization of parabolic problems for non-local convolution type operators under non-diffusive scaling of coefficients

Coffee Break

17⁰⁰ – 17³⁰ **Sergey Denisov**^{*} (UW) The Nonlinear Carleson Conjecture for OPUC: new development

* Online

- 17³⁵ 18²⁰ **Dmitrii Minenkov** (IPMECH RAS) Classical and quantum dynamics of a particle in a narrow angle
- 18²⁵ 18⁴⁰ Yulya Solovyeva Cultural program announcement
 - 18⁴⁰ Welcome Party

Tuesday, June 24

- 10⁰⁰ 10⁴⁵ **Andrey Shkalikov** (MSU) Invariant subspace problem on Krein space and related problems
- $10^{50} 11^{35}$ Karakhan Mirzoev (MSU) TBA

Coffee Break

- 12⁰⁰ 12⁴⁵ **Sergey Tumanov** (MSU) Sectoriality and compactness of the resolvent for a non-self-adjoint Sturm– Liouville operator with singular distributional potential
- 12⁵⁰ 13¹⁵ **Alexey Kosarev** (MSU) Asymptotic expansions of solutions for systems of ODE and basis property of eigenfunctions

Lunch

- 15⁰⁰ 15⁴⁵ **Mark Malamud** (SPBSU) Scattering matrices for singular perturbations and applications to BV problems
- $15^{50} 16^{35}$ **Karol Kozlowski**^{*} (CNRS & ENS de Lyon) On complex-valued β -ensemble integrals

Coffee Break

- 17⁰⁰ 17²⁵ **Grigorii Agafonkin** (MSU) On some properties of eigenvalues of the involutive Friedrichs model
- 17³⁰ 17⁵⁵ **Vladimir Sivkin** (HSE) Asymptotics of spectra for Dirichlet and Dirichlet–Neumann problems for the Sturm–Liouville equation with integral perturbation
 - 18^{00} Walking trip[†]

^{*} Online

[†] A walking trip around Petrograd Side

Wednesday, June 25

 $10^{00} - 10^{45}$ Andrei Shafarevich (MSU)

Semi-classical spectrum for one-dimensional Schroedinger operator with multiscaled abruptly varying potential

10⁵⁰ – 11³⁵ **Sergey Dobrokhotov** (IPMECH RAS) Non-compact Lagrangian manifolds with fold-type singularity and uniform asymptotics of the eigenfunctions of the Laplace operator in an ellipse

Coffee Break

- 12⁰⁰ 12⁴⁵ **Vladimir Nazaikinskii** (IPMECH RAS) Uniformization in semiclassical asymptotics revisited
- 12⁵⁰ 13¹⁵ **Anna Tsvetkova** (IPMECH RAS) Localized Gaussian type beams and asymptotics of solutions of the Helmholtz equation

Lunch

- 15⁰⁰ 15³⁰ Anton Tolchennikov (IPMECH RAS) A semi-classical approximation of solution to the two-dimensional Dirac equation with a linear potential and localized initial condition
- 15³⁵ 16⁰⁵ **Ekaterina Zlobina** (SPBSU) Almost tangential diffraction on a delta potential
- $16^{10} 16^{40}$ Anna Allilueva (IPMECH RAS) Short-wave solutions of the wave equation with localized velocity perturbations

Coffee Break

- 17⁰⁵ 17³⁰ **Maria Votiakova** (IPMECH RAS & MIPT) Asymptotics for long nonlinear coastal waves propagating along a sloping beach
 - 17^{40} Walking trip[‡]

[‡] A walking trip to Yelagin Island

Thursday, June 26

- 10⁰⁰ 10⁴⁵ **Iskander Taimanov** (Sobolev Institute of Mathematics) On singular solutions of soliton equations
- 10⁵⁰ 11³⁵ **Mikhail Guzev** (IAM FEB RAS) Spectral problem for self-balanced stresses in a non-Euclidean continuous medium model
- 11⁴⁰ 12¹⁰ Aleksei Kiselev (PDMI RAS) Unidirectional waves

Lunch

13³⁰ **Bus trip**§

[§] A bus trip to Sestroretsk

Friday, June 27

10⁵⁰ – 11³⁵ Aleksandr Poretskii (SPBSU)

Radiation and scattering of acoustic waves in discrete waveguides with several cylindrical outlets to infinity

Coffee Break

- 12⁰⁰ 12⁴⁵ **Konstantin Makarov** (UM) On a homogeneous symmetric operator
- 12⁵⁰ 13¹⁵ **Pavel Gubkin** (PDMI RAS) The spectral problem for the Kronig–Penney model of the Dirac operators in terms of Schur's algorithm

Lunch

- 15⁰⁰ 15³⁰ Natalya Smorodina (PDMI RAS & SPBSU)
 One theorem on the limit behavior of a branching Wiener process with singular branching rate
- 15³⁵ 16⁰⁰ **Vasily Sergeev** (Chebyshev Laboratory, SPBSU) On adiabatic evolution generated by a Schrödinger operator with discrete and continuous spectra
- 16⁰⁵ 16³⁰ Radim Suleymanov (UUST)
 On two-dimensional model elliptic operator in a strip with fast oscillating boundary and frequent alternation of boundary conditions
- 16³⁵ 17⁰⁰ Arseniy Mishulovich (SPBSU) Threshold approximations for the resolvent of a factorized non-selfadjoint operator family. Applications to homogenization of differential operators
 - 17⁰⁵ **Coffee & Closing**