



Satellite Conference of StatPhys-29

Statistical Physics in Lviv

30.06-3.07 2025

ICMP main building (Svientsitskii Street 1), conference room



Conference program

time is given in Kyiv time zone = UTC+3

Monday, 30.06

Statistical theory

- 14:30 - 14:40 Opening (**E. Aurell**, **L. Brizhik**, **T. Bryk**)
- 14:40 - 15:20 **J. Kurchan** (Paris) The 'mosaic' picture of liquids and glasses
- 15:20 - 16:00 **V. Pergamenschchik** (Warsaw) Partition function of a 2D hard disk system in terms of the exact free volume: gas, liquid, and in between
- 16:00 - 16:30 Coffee break
- 16:30 - 17:10 **E. Aurell** (Stockholm) 201 years of Thermodynamics
- 17:10 - 17:50 **Yu. Holovatch** (Lviv) Emergence of the three-dimensional diluted Ising model universality class in a mixture of two magnets
- 17:50 - 18:10 **A. Gavriliuk** (Kyiv) Tetracriticality and universality classes of Stiefel sigma-models near two dimensions
- 18:30 - Get together party

Tuesday, 1.07

Biophysics

- 9:30 - 10:10 **I. Hoffecker** (Stockholm) Writing digital data to DNA oligonucleotide barcode networks
- 10:10 - 10:50 **A. Baumketner** (Lviv) Theoretical studies of protein aggregation
- 10:50 - 11:10 **L. Brizhik** (Kyiv) Manifestation of coherent many-soliton states in physical and biological systems
- 11:10 - 11:40 Coffee break
- 11:40 - 12:20 **B. Ostash** (Lviv) Ribosome as a regulatory device: a case for antibiotic-producing *Streptomyces* bacteria
- 12:20 - 12:40 **E. Aurell** (Stockholm) Inferring fitness from large genomic data sets
- 12:40 - 13:00 **S. Perepelytsya** (Kyiv) Revealing DNA condensation induced by monovalent counterions
- 13:00 - 13:20 **M. Samborskyy** (Lviv) Oxford nanopore sequencing: at the interface of biology and physics
- 13:20 - 14:30 Lunch

Statistical theory

14:30 - 15:10 **K. Zyczkowski** (Krakow) Statistical properties of spectra of typical quantum operations and Lindblad generators

Dynamics

15:10 - 15:50 **J. Kurchan** (Paris) Time reparametrization softness resolves the dilemma of glass dynamics

15:50 - 16:20 Coffee break

16:20 - 17:00 **P. Cvitanovic** (Atlanta, online) A field theory of turbulence

17:00 - 17:20 **V. Zasenkov** (Kyiv) Advection and diffusion of particles in a random velocity field

17:20 - 17:40 **M. Holovko** (Lviv) On the diffusion of hard sphere fluids in disordered porous media

17:40 - 18:00 **T. Bryk** (Lviv) Transverse dynamics in binary liquids

19:00 - Conference dinner

Wednesday, 2.07

Quantum information & quantum matter

9:30 - 10:10 **V. Tkachuk** (Lviv) Quantum computing of the physical properties of spin systems

10:10 - 10:50 **P. Horodecki** (Gdansk) TBA

10:50 - 11:10 **V. Ignatyuk** (Lviv) Dependence of the decoherence times and decoherence increments on the state of phonon bath in a single qubit dephasing model

11:10 - 11:40 Coffee break

11:40 - 12:00 **E. Aurell** (Stockholm) Attempts to understand quantum black holes

12:00 - 12:20 **Kh. Gnatenko** (Lviv) Quantum states of spin systems representing bipartite graphs and their study using quantum computing

12:20 - 12:40 **O. Derzhko** (Lviv) Spin-1/2 Heisenberg model on the hyperkagome lattice

12:40 - 13:20 **A. Sotnikov** (Kharkiv, online) Tensor network contraction in the zoo of two-dimensional statistical physics models on different Archimedean lattices

13:20 - 14:30 Lunch

Computer simulations & neural networks

14:30 - 15:10 **I. Hoffecker** (Stockholm) Chemical neural network computation with DNA oligonucleotide amplification

15:10 - 15:30 **L. Orellana** (Stockholm, online) Elastic-network-driven Brownian Dynamics Importance Sampling to track large-scale transitions in sub-mesoscopic protein assemblies

15:30 - 15:50 **T. Patsahan** (Lviv) Adsorption and Desorption of Cells on Micropatterned Adhesive Surfaces: A Monte Carlo Simulation Study

15:50 - 16:20 Coffee break

16:20 - 17:00 **A.P. Seitsonen** (Paris) Collective dynamics in liquid water from computer simulations using molecular dynamics

17:00 - 17:20 **A. Trokhymchuk** (Ljubljana) Entropy driven bimodality of local density in confined 2D hard disks

17:20 - **J. Ilnytskyi** (Lviv) Interaction of colloidal particulates with thermosensitive microstructured polymer brush: dissipative particle dynamics simulations

Thursday, 3.07

Statistical theory

10:00 - 10:20 **Yu. Kalyuzhnyi** (Ljubljana) Polymerizing hard spheres with double square-well binding potential

10:20 - 10:40 **P. Saprianchuk** (Lviv) A statistical theory of water molecules in narrow carbon nanotubes

10:40 - 11:00 **D. Shapoval** (Lviv) Beyond the epsilon-expansion: reliable critical exponents in structurally-disordered long-range interacting systems

11:00 - 11:30 Coffee break

11:30 - 12:20 **Yu. Slyusarenko** (Kharkiv) Method of canonical transformations in the theory of quantum gases interacting with radiation

12:20 - Closing (**E. Aurell**, **L. Brizhik**, **T. Bryk**)