



SMHS Program

SMHS- Website



Dubna-2025



**BOGOLIUBOV LABORATORY
OF THEORETICAL PHYSICS**

EXPLORING THE LAWS OF NATURE FROM QUANTUM TO COSMOS

July 7, Monday

9:30 – 10:50 Registration at “JINR visiting center”

 [Молодежная ул., 5, Дубна, Московская обл., 141980](#)

10:50 – 11:00 Opening ceremony

Plenary talks (Chairman Yu. M. Shukrinov)

11:00 – 11:45 A. A. Golubov Full Counting statistics for unconventional superconductor Junctions

11:45 – 12:30 I. Burmistrov Bulk-edge correspondence at the spin-to-integer quantum Hall effect crossover in topological superconductors

12:30 – 14:00 Lunch

Plenary talk (Chairman A. A. Golubov)

14:00– 14:40 Yu. Shukrinov Peculiarities of mutual influence of superconductivity and magnetism in Josephson structures with ferromagnet.

Session 1 (Chairman A. A. Golubov)

14:40 – 15:10 J. Tekic Self-generated time crystal in superconductor ferromagnet heterostructure.

15:10 – 15:40 M. Shustin The fate of Majorana zero modes under markovian dissipation.

15:40 – 16:00 M. Khrenov Josephson oscillator for on-chip qubit excitation and two-tone spectroscopy.

16:00 – 16:30 Coffee

Session 2 (Chairman J. Tekic)

16:30 – 16:50 I. R. Rahmonov Resonant control of magnetization in a shunted φ_0 junction with LC circuit

16:50 – 17:10 E. Kovalenko Current steps in voltage-biased φ_0 Josephson junction under a harmonic magnetic field

17:10 – 17:30 K. V. Kulikov The uniqueness of the locking phenomena in φ_0 Josephson junction

19:00 **Welcome Party** (Baryon Restaurant – Grill Hotel at Moskovskaya, 2)



July 8, Tuesday

Session 1 (Chairman K. V Kulikov)

- 09:30 – 10:00 T. Golikova Controllable supercurrent and $0-\pi$ transition via quasiparticle injection in mesoscopic multiterminal SNS Josephson junctions.
- 10:00 - 10:30 V. Zhaketov Polarized neutron scattering for 2D periodic and Fibonacci heterostructures.

10:30 – 11:00 Coffee

Plenary talks (Chairman I. Burmistrov)

- 11:00 – 11:45 A. S. Mel'nikov Interplay of superconductivity and altermagnetism in hybrid systems.
- 11:45 – 12:30 I. I. Soloviev Integrated cryogenic superconductor qubit control system.

12:30 – 14:00 Lunch

Session 2 (Chairman A. S. Mel'nikov)

- 14:00 – 14:30 A. Bobkov Anomalous Josephson effect and superconducting diode effect in Josephson junctions via RET_2Si_2 intermetallic magnets.
- 14:30 – 15:00 S. Kuzmichev Observation of the Leggett collective plasma oscillation and the spin exciton in two-gap superconductors using SNS-Andreev spectroscopy.
- 15:00 – 15:30 A. Kopasov Effects of the in-plane magnetic field in van der Waals bilayers with interlayer superconducting ordering.

15:30 – 16:00 Coffee

Session 3 (Chairman A. Bobkov)

- 16:00 – 16:30 A. Putilov Vortex structure and intervortex interaction in superconducting structures with intrinsic diode effect.
- 16:30 – 17:00 T. Kuzmicheva Single-gap superconductivity of alkali-metal ferroselenides with isovalent substitution
- 17:00 – 17:30 S. Larionov Peculiarities of the vortex dynamics in a granular niobium superconducting bridge.



July 9, Wednesday

Session 1 (Chairman I. R. Rahmonov)

- 09:30 – 10:00 M. Skvortsov Thermal phase slips in superconducting films
- 10:00 – 10:30 A. Semenov Quantum Coulomb drag mediated by cotunneling of fluxons

10:30 – 11:00 Coffee

Plenary talks (Chairman Yu. M. Shukrinov)

- 11:00 – 11:45 Y. Fominov Superconducting diode effect.
- 11:45 – 12:30 N. Klenov Superconducting neuromorphic frontiers: Josephson junctions in adiabatic and spiking neural networks.

12:30 – 14:00 Lunch

Session 2 (Chairman V. Bol'ginov)

- 14:00 – 14:30 V. Yukalov Rabi-Josephson dynamical transition in trapped superfluids.
- 14:30 – 15:00 D. Kalashnikov Nonreciprocal phenomena in the asymmetric superconducting interferometer with external microwave irradiation
- 15:00 – 15:30 A. Pankratov Detectors for radioastronomy and axion search.

15:30 – 16:00 Coffee

16:00 – 17:00 Poster session

17:10 – 18:10 Excursion (Bus from BLTP - LHEP – Grill Hotel)

- Bus move from BLTP to LHEP at 17:10
- Bus move from LHEP to Grill Hotel at 18:10

19:00 – 22:00 Barbeque

- Bus move from Grill Hotel to Ratmino at 18:40
- Bus move from Ratmino to Grill Hotel at 22:00



July 10, Thursday

Session 1 (Chairman M. Nashaat)

10:00 – 10:30 D. V. Anghel Resonance phenomena and Kapitza pendulum effects in a nanomagnet coupled to a Josephson junction and under external radiation.

10:30 – 11:00 **Coffee**

Plenary talk (Chairman Y. Fominov)

11:00 – 11:45 V. Krasnov Josephson emission: junction as an active antenna.

Session 2 (Chairman N. Klenov)

11:45 – 12:15 M. Khapaev Finite difference balance method for discontinuous solutions of the Usadel equations

12:30 – 14:00 **Lunch**

Session 3 (Chairman V. Krasnov)

14:00 – 14:30 V. Bol'ginov Numerical modeling for the design of superconducting neurons
 14:30 – 15:00 A. Neilo Superconductor-ferromagnet spin valve with tunable inductance

15:00 – 15:20 T. Enderova DC and AC study of anisotropic transport properties in the topological insulator $\text{Bi}_{1.06}\text{Sn}_{0.04}\text{Sb}_{0.9}\text{Te}_2\text{S}$
 15:20 – 15:40 K. Polevoy Transport properties of planar Nb/Al/Nb Josephson junction

15:40 – 16:00 **Coffee & Closing**



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July 9, Wednesday

Poster Session (16:00 – 17:00)

P1	M. Nashaat AbdelGhani	Magnetic moment bifurcation on different synchronized voltage steps in φ_0 Josephson junction
P2	D. Annenkov	Domain wall superconductivity in van der Waals structures with ferroelectric ordering
P3	M. Bashashin	High-performance numerical study of physical characteristics of superconducting Josephson structures in dependence of parameters of the models
P4	Y. Dmitrievtsev	Superconducting orbital diode effect in SN bilayers
P5	A. Elistratova	To be announced
P6	A. Ionin	Progress of implementation of the superconducting neuron prototype
P7	O. Kibardina	Possibility of magnetization controlling in a shunted φ_0 junction
P8	D. Kokaev	Parametric resonance in a Φ_0 Josephson junction
P9	D. Malkin	Investigation of magnetization dynamics in φ_0 Josephson Junctions under the influence of an external EM field
P10	A. Rahmonova	Development of toolkit for mathematical modeling of a DC-SQUID
P11	V. Sakhin	Magnetotransport of Pb/ $\text{Bi}_{1.08}\text{Sn}_{0.02}\text{Sb}_{0.9}\text{Te}_2\text{S}$ heterostructures
P12	R. Tyumenev	Development and measurement of a cryogenic microwave generator based on Josephson junction planar technology



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