



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)

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|---------------|---------------|--|
| 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)

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|--------------|---------------|--|
| 14:00– 14:40 | Yu. Shukrinov | Peculiarities of mutual influence of superconductivity and magnetism in Josephson structures with ferromagnet. |
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Session 1 (Chairman A. A. Golubov)

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|---------------|------------|--|
| 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)

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|---------------|----------------|---|
| 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 | Locking phenomena in Josephson junction conventional vs hybrid |

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

“ 7th of July”

SMHS Workshop “ BLTP - JINR – Dubna”



**BOGOLIUBOV LABORATORY
OF THEORETICAL PHYSICS**

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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.

" 8th of July"

SMHS Workshop " BLTP - JINR – Dubna"



**BOGOLIUBOV LABORATORY
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EXPLORING THE LAWS OF NATURE FROM QUANTUM TO COSMOS

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

“ 9th of July”

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SMHS Workshop “ BLTP - JINR – Dubna”



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EXPLORING THE LAWS OF NATURE FROM QUANTUM TO COSMOS

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. Dmitriyev	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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