



**NATIONAL ACADEMY OF SCIENCES OF UKRAINE
V. G. BARYAKHTAR INSTITUTE OF MAGNETISM OF THE NATIONAL ACADEMY
OF SCIENCES OF UKRAINE**

**PROGRAM
INTERNATIONAL CONFERENCE
MODERN PROBLEMS OF SOLID-STATE PHYSICS AND MAGNETISM
in memory of Academician Viktor G. Baryakhtar**

September 24-26, 2025.

Kyiv, Ukraine

Zoom links for online participants

Day 1, September 24

Morning session (10.00-14.00 Kyiv time)

<https://us05web.zoom.us/j/88446921446?pwd=njZbn3LUceee8gbS60btqstpCg7Oe9.1>

Meeting ID: 884 4692 1446

Passcode: SSPM2025

Afternoon session (15.00-17.30)

<https://us05web.zoom.us/j/83206906938?pwd=NIbqwI1L98U49jlooA7Y6rsCWdbiUg.1>

Meeting ID: 832 0690 6938

Passcode: SSPM2025

Day 2, September 25

Morning session (10.00-14.00)

<https://us05web.zoom.us/j/81367169681?pwd=eTIXJxA0db4xb6wHwfJLXelkmjF0Dy.1>

Meeting ID: 813 6716 9681

Passcode: SSPM2025

Afternoon session (15.00-17.30)

<https://us05web.zoom.us/j/89808201686?pwd=4eFCOpftoYTJhzPWip41ffDsj1RMZm.1>

Meeting ID: 898 0820 1686

Passcode: SSPM2025

Day 3, September 26

Morning session (10.00-14.00)

<https://us05web.zoom.us/j/84531377823?pwd=P1OjdtUzbR71InuEPh7aLpDFwBgCz.1>

Meeting ID: 845 3137 7823

Passcode: SSPM2025

Afternoon session (15.00-17.15)

<https://us05web.zoom.us/j/81915973030?pwd=joQbkPDgBESVCrBA1dcugGkDMS24hx.1>

Meeting ID: 819 1597 3030

Passcode: SSPM2025

Day 1, September 24, 2025

[Kyiv time is used, EEST (GMT+3) time zone]

9.45	Opening of registration desk
10.00-10.20	Welcome words
Section VI. Functional magnetic materials	
10.20-11.00	N. Mathur. Modifying MLCs of PST for improved performance
11.00-11.30	O. Fertman. High-pressure stabilized Bi(FeSc)O ₃ multiferroics: magnetic behavior
11.30-11.45	B. S. Baitaliuk. Novel Press-Free Nanocrystalline Soft Magnetic Composites With a Portland Cement Binder for High-Temperature Applications
11.45-12.00	coffee break
Section II.A. Physics of condensed matter and phase transformations	
12.00-12.30	B. Ivanov. Altermagnetism: new concept or well-forgotten old
12.30-13.00	X. Moya. Barocaloric materials for heating and cooling
13.00-13.30	Yu. Holovatch. Effective and asymptotic criticality of structurally disordered magnets
Section VII. Interdisciplinary research	
13.30-14.00	K. Schalm. Electronic hydrodynamics in graphene, incoherent metals and other strongly correlated systems
14.00-15.00	lunch break
15.00-15.30	V. Orel. Application of magnetic nanocomposite for cancer imaging and treatment in an experimental tumor model
15.30-15.45	O. O. Kryvchikov. Graph Neural Networks for Predicting Properties of Quasi-One-Dimensional Ising Systems.
Section I. Nanomaterials and nanotechnologies	
15.45-16.15	Yu. Shlapa. Inorganic oxide nanocomposites with pronounced bioactivity for biomedical application
16.15-16.30	Yu. S. Doronin. Electron-Induced Processes in a Clustered Supersonic Argon Jet.
16.30-16.45	A. N. Morozovska. Dielectric Response of Hf _x Zr _{1-x} O ₂ Nanoparticles and Nanocomposites
16.45-17.00	M. V. Los. On the (Non)Monotonic Strain Dependence of The Energy Gap in the Band Structure of Phosphorene.
17.00-17.30	G. Singh. Green Strategy for Environmental Remediation and Pathogen Control
17.30-18.00	posters: Sec. I Nanomaterials and nanotechnologies, Sec. VI Functional magnetic materials, Sec. VII Interdisciplinary research

Day 2, September 25, 2025

9.45	Opening of registration desk
Section V.A. Spintronics, magnonics and microwave magnetism	
10.00-10.30	V. Krivoruchko. Quantum topological phase and electric field control of spin-waves' dynamics in magnetic insulators
10.30-11.00	V. Korenivski. Spin dynamics in ferromagnetic/ antiferromagnetic multilayers
11.00-11.15	
Section IV. Superconductivity	
11.15-11.45	Y. Klos. Ferromagnetic-superconducting hybrids for local control of magnetization configuration and dynamics
11.45-12.00	coffee break
12.00-12.30	A. Kordyuk. Theory assisted search for new quantum materials: synchrotron based ARPES and AI-driven data analysis
12.30-12.45	V. N. Krivoruchko. Magnetism and Superconductivity: Local Spin-Triplet Pairs In Half-Metallic Manganites - a Base Platform For Quantum Materials With Unique Superconducting Characteristics.
12.45-13.00	A.V. Hlushchenko. Thermal and Spin Current Noise in The Racetrack Memory With Domain Walls and Skyrmions.
Section II.B. Physics of condensed matter and phase transformations	
13.00-13.30	V. Lvov. Magnetic and magnetocaloric properties of ferromagnets undergoing structural phase transitions
13.30-13.45	M. Yu. Kovalevsky. Spiral Ordering in Spin 3/2 Magnets.
13.45-14.00	S. Sologub. Structure And Electronic Magneto-Transport of Epitaxial Graphene Proximized By Adsorbed And Intercalated Atomic Layers.
14.00-15.00	lunch break
15.00-15.30	R. Umetsu. Electronic state and Magnetic properties of half-metal type Heusler alloys
15.30-15.45	M. Dudka. Critical Properties of Structurally Disordered Magnets With Long-Range Interactions.
15.45-16.15	O. Serha. Spontaneous emergence of phase coherence in a room-temperature magnon Bose–Einstein condensate
Section III. Thin films and coatings	
16.15-16.45	I. Vladimirskyi. Tailoring structural and magnetic properties of Co/Pt films via stacking engineering, annealing, and ion irradiation
16.45-17.15	A. Vovk. Structural and Magnetic Properties of Epitaxial Co ₂ FeGe Films: Effect of Thermal Processing
17.15-17.30	R. A. Osypova. Influence of Atomic Surface Diffusion on The Structure And Morphology of Deposited Tantalum Thin Films.
17.30-18.00	posters: Sec. II Physics of condensed matter and phase transformations, Sec. IV Superconductivity, Sec. V Spintronics, magnonics and microwave magnetism

Day 3, September 26, 2025

9.45	Opening of registration desk
Section V.B. Spintronics, magnonics and microwave magnetism	
10.00-10.30	A. Chumak. Quantum magnonics with propagating magnons
10.30-10.45	D.V Slobodianiuk. Probabilistic Computing With Josephson-Like Antiferromagnetic Spin Hall Oscillator.
10.45-11.00	J. Kharlan. Excitation of High Frequency Spin Waves in Low External Field in Hybrid Ferromagnetic-Metallic Systems.
11.00-11.15	S. I. Yeromin. Surface Magnon-Plasmon Hybrid Modes in Metal–AFM–Metal Waveguides.
11.15-11.30	I. Yastremsky. Bloch Point Structure And Relaxation at Finite Temperatures.
11.30-11.45	O. V. Shtanko. Dual-antiferromagnetic-Layer Spin Hall Oscillator.
11.45-12.00	coffee break
Section V.C. Spintronics, magnonics and microwave magnetism	
12.00-12.30	G. Kakazei. Radial magnetic vortices in multilayered nanopillars
12.30-12.45	R. R. Teslia. Current-Driven Dynamics Of Chiral Domain Walls In A Quasi-One-Dimensional Helimagnet
12.45-13.00	I. O. Sotnyk. Programmable Artificial “Neuron” Based on Antiferromagnetic Spin Hall Oscillator
13.00-13.15	D. Karakuts. Domain Wall Diode and Trap By Cross Section Tailoring in Ferromagnetic Nanostripes
13.15-13.30	I. Fantych. L1 ₀ -Based Spin Diodes as Non-Resonant Signal Detectors and Energy Harvesters
13.30-14.00	D. Makarov. Curvilinear magnetism: fundamentals and applications
14.00-15.00	lunch break
Section V.D. Spintronics, magnonics and microwave magnetism	
15.00-15.15	O. Kozlov. Current-Induced Switching Of Interlayer Exchange In Spin Valves At Room Temperature
15.15-15.30	I. V. Gerasimchuk. Eigenoscillations of the Non-Uniform Spin Texture in a Two-Sublattice Antiferromagnet with the Dzyaloshinskii–Moriya Interaction.
15.30-16.00	D. Sheka. Geometry-governed chiral effects in curvilinear magnetism
16.00-16.30	O. Prokopenko. Antiferromagnetic spintronic oscillators and signal detectors
16.30-17.00	S. Majetich. Magnetic Tunnel Junctions: Ferromagnetic, Superparamagnetic, and Antiferromagnetic
17.00-17.15	closing remarks

List of posters

Section I. Nanomaterials and nanotechnologies

- 1 **V. V. Lizunov, T. P. Vladimirova, S. V. Lizunova, O. S. Skakunova.** Diagnostics of Nanoscale Defects in Garnet Crystals by High-Resolution Dynamical Diffractometry.
- 2 **L. O. Abramenko, A. V. Korotun, V. M. Matiushyn.** Ordered MNG-Composite Based on a Cubic Lattice Of Metal Nanocylinder Dimers.
- 3 **V. K. Nosenko, O. P. Fedorov, T. V. Pryadko, V. A. Dekhtyarenko, T. P. Vladimirova, O. M. Semyrga, I. V. Zagorulko.** Formation of Nano-Sized Solidification Structure and Specific Segregation of Components in Medium-Entropic Co-Ni-Cr Alloys.
- 4 **A. V. Bodnaruk, A. N. Morozovska, Yu. O. Zagorodniy, V. N. Pavlikov, O. V. Leshchenko, M. V. Karpets, E.A. Eliseev.** Room Temperature Multiferroics on the Base of Single-Phase Perovskites PFN and PFT Doped with Mn Ions
- 5 **Ya. P. Lazorenko, V. P. Mitsai.** Optical and Sensory Properties of 2,4-Dinitrophenylhydrazine-Doped Fumed Silica Films
- 6 **O. P. Ponomarov, S. O. Ponomarova, Yu. M. Koval`.** Graphene Vibrational Thermodynamics
- 7 **O. P. Ponomarov, S. O. Ponomarova, Yu. M. Koval`.** Machine Learning Approach To Predict Curie Temperature In Binary Alloys

Section II. Physics of condensed matter and phase transformations

- 1 **A.V. Uriadov, I.V. Ivanchenko, E.N. Kalabukhova, D.V. Savchenko.** Temperature-Dependent EPR Study of Iron-Doped Cadmium Manganese Telluride Crystals.
- 2 **A.P. Bukivskii, Yu.P. Gnatenko, A.S. Opanasyuk, P.M. Bukivskij, S.A. Iliash, M.S. Furier.** Impact of Dysprosium Doping on the Microstructure, Impurity Content, and Excitonic Properties of CdS Thin Films.
- 3 **P.M. Bukivskij, Yu.P. Gnatenko, A.P. Bukivskii.** Low-Temperature Study of the Magnetic Polaron Effect in $\text{Cd}_{1-x}\text{Dy}_x\text{Te}$ Diluted Magnetic Semiconductors.
- 4 **V. V. Chabanenko, E. E. Zubov, A. Nabialek.** Aspects Of Electro-Magnetic Properties Of Manganites And Polaron Excitation.
- 5 **Yu. V. Horbatenko, V.V. Sagan, A. I. Krivchikov, O. A. Korolyuk, O. O. Romantsova, D. Szewczyk.** Low-Temperature Studies of Thermal Conductivity of Carbon Materials.
- 6 **A. S. Nuradinov, K. A. Sirenko, I. A. Nuradinov, O. V. Chystiakov, D. O. Derecha** The Influence of Scale Factors on Nucleation and Crystallization.
- 7 **S. O. Reshetniak, G.Yu. Lavanov, V. M. Kalita.** Influence of non-Heisenberg exchange on the entropy of an isotropic ferromagnet
- 8 **V. P. Mitsai, Ya. P. Lazorenko.** Fluorescent Response of Hybrid Films With a Coumarine7/Fluorescein Dye System to Gaseous Ammonia.
- 9 **D. A. Kukusta, V. N. Antonov, L. V. Bekenov.** Energy Band Structure and Resonant Inelastic X-Ray Scattering in Some Iridates
- 10 **I. V. Plyushchay, O. I. Plyushchay, V. B. Shevchenko.** First-Principles Modeling Of The Electronic Structure Peculiarities In High-Entropy Transition Metal Carbides

Section IV. Superconductivity

- 1 **D. Menesenko, V. Tarenkov, V. Krivoruchko, A. Shapovalov, V. Shamaev** Edge Inhomogeneities and Diode-Like Current-Voltage Characteristics of Superconducting More Films.

Section V. Spintronics, magnonics and microwave magnetism

- 1 **A. M. Korostil, M. M. Krupa.** On Magneto-Controlled Electric Capacitance in Magnetic Junctions.
- 2 **O. V. Malyshev, V. Y. Malyshev, O. V. Prokopenko, G. A. Melkov.** Hybridized Excitations in a Ferromagnetic Wire.
- 3 **O.L. Andrieieva, A.V. Hlushchenko, O.V. Chechkin.** Stochastic Domain Wall and Skyrmion Motion on the Randomly Inhomogeneous Racetrack Memory.

Section VI. Functional magnetic materials

- 1 **V. Borynskyi, D. Popadiuk, A. Kravets, Y. Shlapa, S. Solopan, V. Korenivski, A. Belous, A. Tovstolytkin.** Magnetic Anisotropy and Temperature-Dependent Properties of Al-Doped YIG Ceramics.
- 2 **O. Kapush, B. Shanina, A. Konchits, N. Mazur, V. Dzhagan, I. Vorona, L. Mikoliunaite, G. Zambzickaite, M. Talaikis, M. Skoryk, Yukhymchuk V.** Controllable Synthesis and Characterization of Fe₃O₄/Au Composites for Magneto-Plasmonic Applications.
- 3 **V. K. Nosenko, A. V. Nosenko, V. V. Kyrylchuk, O. I. Boshko, I. V. Zagorulko.** Magnetic Behavior and Structural Relaxation of CO-SI-B Amorphous Alloys Doped by Fe and Cr.
- 4 **J. Kharlan, O. Salyuk, H. Marinchenko, V. Golub.** Tensile Stresses in Nimnga Laminate Composite Framed by Soft Magnetic Foils
- 5 **O. V. Nogovitsyn, V. O. Seredenko, O. V. Seredenko, D. O. Derecha.** Influence of a Constant Magnetic Field on the Structure Formation of a Cu-Fe Alloy in Its Casting And Solidifying

Section VII. Interdisciplinary research

- 1 **O. S. Ostapenko, S. O. Mamilov, V. B. Orel, V. E. Orel, O I. Tovstolytkin** Halbach Matrix Approach as a Promising Method to Advance Magnetomechanical Action On Biological Tissues.
- 2 **O. Yu. Salyuk, O. S. Ostapenko, Yu.B. Skirta, D.V. Velyhotskyi, S. O. Mamilov.** Effect of a Constant Magnetic Field on the Magnitude of Laser Photodissociation of Oxyhemoglobin in Arterial Blood.
- 3 **Gorobets S.V., Gorobets O.Yu., Salatskiy Ye.A.** Magnetic field control of calcium signal in cancer cells
- 4 **Gorobets S., Gorobets O., Sverdlichenko D.** Magnetic field influence on intracellular Ca²⁺ dynamics