



8-11 September 2025

Yeravan, Armenia

<https://ipr.sci.am/MSM2025>

PROGRAM

13th International Conference

Magnetic and Superconducting Materials (MSM25)



OPTICA
IPR Armenia Student Chapter



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- ✓ **Institute for Physical Research of National Academy of Sciences of Armenia**
- ✓ **IPR Armenia Optica Student Chapter**

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- ✓ **National Academy of Sciences of Armenia, NAS RA**
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Program at a Glance

Monday, September 8		Tuesday, September 9	Wednesday, September 10	Thursday, September 11
8:00-9:00 Registration				09:00 - 19:00 Excursion
9:00 – 9:20 (1 floor) Opening Ceremony				
Magnetism large Hall (1 floor)		Superconductivity large Hall (1 floor)	Magnetism large Hall (1 floor)	
9:20 – 10:00 PT: Ulf Wiedwald		9:00 – 9:40 PT: Dariusz Kaczorowski	9:00 – 9:40 PT: Karen Martirosyan	
10:00 – 10:20 CT: Akhmed Aliev		9:40 – 10:10 IT: Laura Greene	9:40 – 10:00 CT: Vladimir Sokolovskiy	
10:20 – 10:40 CT: Abdulkarim Amirov		10:10– 10:40 IT: Tomasz Cichorek	10:00– 10:20 CT: Vasily Buchelnikov	
10:40 – 11:00 Coffee break		10:40 – 11:00 Coffee break	10:20– 10:40 CT: Ekaterina Klevtsova	
Magnetism large Hall (1 floor)	Superconductivity Round Hall (2 floor)	Magnetism large Hall (1 floor)	10:40 – 11:00 Coffee break	
11:00 – 11:30 IT: Natalia Shkodich	11:00 – 11:30 (online) IT: Vladimir Pudalov	11:00 – 11:30 IT: Davide Peddis	Magnetism large Hall (1 floor)	
11:30 – 12:00 IT: Bilal Gökce	11:30 – 12:00 IT: Ivan Maggio-Aprile	11:30 – 12:00 IT: Marina Spasova	11:00 – 11:30 (online) IT: Mariia Efremova	
12:00 – 12:20 CT: Davit Hambardzumyan	12:00 – 12:20 CT: Vardan Apinyan	12:00 – 12:20 CT: Ekaterina Kunitsyna	11:30 – 12:00 IT: Makis Angelakeris	
12:20 – 12:40 CT: Emmanouil Kasotakis	12:20 – 12:40 CT: Mariya Matyunina	12:20 – 12:40 CT: Vadim Efimov	12:00 – 12:20 CT: Vladimir Khovaylo	
12:40 – 13:00 CT: Olga Miroshkina	12:40 – 13:00 CT: Irina Martirosian	12:40 – 13:00 CT: Roman Morgunov	12:20 – 12:40 CT: Larissa M. Feitosa	
13:00 – 14:00 Lunch		13:00 – 14:00 Lunch	12:40 – 13:00 CT: Adler Gamzatov	
Magnetism large Hall (1 floor)	Superconductivity Round Hall (2 floor)	Superconductivity large Hall (1 floor)	13:00 – 14:00 Lunch	
14:00 – 14:30 IT: Maxim Abakumov	14:00 – 14:30 IT: Konstantin Arutyunov	14:00 – 14:40 PT: Konstantin Arutyunov	14:00 – 14:30 IT: Anna Semisalova	
14:30 – 14:50 CT: Aleksey Nikitin	14:30 – 14:50 CT: Zahra Owjifard	14:40 – 15:10 IT: Andrei Rogalev	14:30 – 15:00 IT: Mojtaba Alaei	
14:50 – 15:10 CT: Alireza Qaiumzadeh	14:50 – 15:10 CT: Valeriia Pashkovskaia		15:00 – 15:20 CT: Nataliya Pugach	
15:10 – 15:30 CT: Vadim Ohanyan	15:10 – 15:30 CT: Zahra Alizadeh	15:10 – 15:30 CT: Mehdi Kargarian	15:20 – 15:40 CT: Evgeny Mashkovich	
15:30 – 15:50 CT: Andrzej Wisniewski	15:30 – 15:50 CT: Dmitrii Aleksandrov	15:30 – 15:50 CT: Astghik Kuzanyan	15:40 – 16:00 CT: Khachatur Kirakosyan	
15:50 – 16:10 CT: Harutyun Gyulasaryan	15:50 – 16:10 CT: Reza Rajabi	15:50 – 16:10 CT: Yury Shukrinov		
16:10– 17:00 Welcome party		16:10– 16:30 Coffee break	16:00– 16:30 Closing Ceremony	
		16:30– 17:30 Poster session		
			18:30 Banquet	

Plenary talk (PT)

 Contributed talks (CTs) Magnetism/Superconductivity
 Invited talk (IT)
 Student

Monday, 08.09.2025

Time	
08:00 09:00	Registration
09:00 09:20	Opening Ceremony/Welcome Speech Prof. Alexander Mukasyan Prof. Aram Papoyan, Vice President of NAS RA Dr. Pavel Muzikyan, Director of IPR of NAS RA Prof. Michael Farle Dr. Aram Manukyan
Magnetism Chair: Prof. Michael Farle	
09:20 10:00	Plenary talk Prof. Ulf Wiedwald Harnessing Bioengineered Magnetic Nanoparticles for Advanced Theranostics
10:00 10:20	Dr. Akhmed Aliev On Methods of Direct Measurement of Magnetocaloric Effect in the Temperature Range of 4-400 K under AC Magnetic Fields
10:20 10:40	Dr. Abdulkarim Amirov Recent Advances in Biomedical Applications of Magnetocaloric Materials: Case of FeRh
10:40 11:00	Coffee break ☕
Magnetism Chair: Prof. Ulf Wiedwald	
11:00 11:30	Invited talk Dr. Natalia Shkodich Room-temperature Ferromagnetism in Nanocrystalline CoMnFeNiGa High Entropy Alloys: Across Different Length Scales
11:30 12:00	Invited talk Prof. Bilal Gökce Advanced Processing of Ni-Mn-Sn Heusler Alloys for Magnetic Hysteresis Design via Additive Manufacturing
12:00 12:20	Mr. Davit Hambardzumyan Design and Engineering of Iron-Carbon Nanocomposites
12:20 12:40	Mr. Emmanouil Kasotakis Enhanced Magnetization and Coercivity of CoCrFeMnNi (Cantor) High Entropy Alloy by Ag Addition
12:40 13:00	Dr. Olga Miroshkina Electronic Structure of All-d-metal Ni(-Co)-Mn-Ti vs. p-d Ni ₂ MnSn: Insights from DFT and XAS
Superconductivity Chair: Prof. Dariusz Kaczorowski	
11:00 11:30	Invited talk Prof. Vladimir Pudalov Superconductivity in Hydrides at Nearly Room Temperature

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11:30 12:00	Invited talk Dr. Ivan Maggio-Aprile Vortex-ore States, Conductance Modulations and Lifshitz Transition Revealed in Bi-2212 with Scanning Tunneling Spectroscopy
12:00 12:20	Dr. Vardan Apinyan Electron-phonon Interaction and Spin Triplet Superconductivity in Layered Square-lattice Bilayers
12:20 12:40	Dr. Mariya Matyunina Effects of High Pressure on Structural and Electronic Properties of High-Temperature Superconductor $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$
12:40 13:00	Ms. Irina Martirosian Normal Zone Propagation Processes in non-insulated HTS Windings for High-Field Electromagnets
13:00 14:00	Lunch 
Magnetism Chair: Prof. Davide Peddis	
14:00 14:30	Invited talk Dr. Maxim Abakumov Magnetic Nanoparticles in Biomedicine: Effects of Shape, Size and Structure on Biomedical Applications
14:30 14:50	Dr. Aleksey Nikitin Development of Technology for Remote Magnetomechanical Control of the Structure of Molecular Systems
14:50 15:10	Prof. Alireza Qaiumzadeh Electrically Controlled Crossed Andreev Reflection in Two-dimensional Antiferromagnets
15:10 15:30	Dr. Vadim Ohanyan Electric Field Driven Flat Bands in $S=1/2$ Sawtooth Chain
15:30 15:50	Prof. Andrzej Wisniewski Spin Switching and Exchange Bias Effect in Compensated Ferrimagnets
15:50 16:10	Dr. Harutyun Gyulasaryan Magnetic Hyperthermia Effect and Equilibrium Susceptibility in Core-shell Fe- Fe_3C Nanoparticles
Superconductivity Chair: Prof. Laura Greene	
14:00 14:30	Invited talk Prof. Konstantin Arutyunov Proximity Induced Superconductivity in Electroactive Polymer
14:30 14:50	Ms. Zahra Owjifard Critical Current Density in Superconducting Tapes by Applying Randomness on the Radii of Pining Centers in Triangular and Conformal Pinning Arrays
14:50 15:10	Ms. Valeriia Pashkovskaia Impurities Impact on Vortex Dynamics in the Vicinity of the Bogomolny Point
15:10 15:30	Ms. Zahra Alizadeh From Superconductivity to Non-superconductivity in LiPdH : a First Principle Approach

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15:30 15:50	Mr. Dmitrii Aleksandrov Normal Zone Propagation and Thermal Stability in Multi-tape Superconducting Cables for High-Field Applications
15:50 16:10	Mr. Reza Rajabi YBCO Weak Link Construction Using Maskless Lithography
16:10 17:00	Welcome party ☕

Tuesday, 09.09.2025

Time	Superconductivity Chair: Prof. Konstantin Arutyunov
09:00 09:40	Plenary talk Prof. Dariusz Kaczorowski Unconventional Superconductivity in Ce-based Heavy-fermion Compounds
09:40 10:10	Invited talk Prof. Laura Greene Planar Tunnel Spectroscopy of CeCoIn ₅ : Investigation of local-moment Pairing
10:10 10:40	Special talk Prof. Tomasz Cichorek Constraints on an Order Parameter in the Candidate Chiral Superconductor 4Hb-TaS ₂ From a Study of the Lower Critical Field
10:40 11:00	Coffee break ☕
	Magnetism Chair: Prof. Bilal Gökce
11:00 11:30	Invited talk Prof. Davide Peddis Interplay Between Intra- and Interparticle Effects in Bi-magnetic Core/Shell Nanoarchitectures
11:30 12:00	Invited talk Dr. Marina Spasova Tuneable Magnetic Remanence of Nanoscale Antiferromagnetically Coupled Fe ₃ O ₄ Halves in a Silica Shell
12:00 12:20	Dr. Ekaterina Kunitsyna Study of Interaction of Single-molecular Magnets with Superconducting Particles
12:20 12:40	Mr. Vadim Efimov Study of the Transformation of Functional Properties of Materials under the Influence of Pulsed Radiation Irradiation by Electrons and Ions with Dose
12:40 13:00	Prof. Roman Morgunov Mechanically driven magneto-caloricity in Gd microwires
13:00 14:00	Lunch ☕
	Superconductivity Chair: Prof. Tomasz Cichorek
14:00 14:40	Plenary talk Prof. Konstantin Arutyunov Fundamental limitations and perspectives of nanoelectronics development

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14:40 15:10	Invited talk Dr. Andrei Rogalev X-ray Magnetic Circular Dichroism as a Probe of Emergent Magnetic States in Unconventional Superconductors
15:10 15:30	Prof. Mehdi Kargarian Topological Materials Exhibiting Surface and Bulk Superconductivity
15:30 15:50	Dr. Astghik Kuzanyan Prospects for Using Conventional Superconductors in the Design of the Detection Pixel of a Thermoelectric Single Photon Detector
15:50 16:10	Prof. Yury Shukrinov Manifestation of the Mutual Influence of Superconductivity and Magnetism in Josephson Structures with a Magnetic
16:10 16:30	Coffee break ☕
16:30 17:30	Poster Session

Wednesday, 10.09.2025

Time	Magnetism Chair: Dr. Marina Spasova
09:00 09:40	Plenary talk Prof. Karen Martirosyan Magnetoelectric Materials: Structural Characterization and Multifunctional Applications
09:40 10:00	Dr. Vladimir Sokolovskiy Ab initio and Monte Carlo Approaches for the Magnetic and Magnetocaloric Properties in Ni-Co-Mn-Ti Heusler Alloy
10:00 10:20	Prof. Vasily Buchelnikov Crystal Structures and Thermoelectric Properties of X_2CsBi ($X = Li, K, Na, Rb$) Semiconductor Alloys
10:20 10:40	Dr. Ekaterina Klevtsova Study of Structural, Electronic and Magnetotransport Properties of Functional Materials Based on Cobalt Oxide, Irradiated to Improve Operational Characteristics in Ultra-high-frequency Spintronics Devices
10:40 11:00	Coffee break ☕
	Magnetism Chair: Prof. Karen Martirosyan
11:00 11:30	Invited talk (online) Dr. Mariia Efremova Femto-Nm Torques Generated by Single Magnetic Particles for Cell Actuation Measured by AFM Magnetometry
11:30 12:00	Invited talk Prof. Makis Angelakeris Magnetic Nanoparticle Tuning for Active Biosensing Performance
12:00 12:20	Prof. Vladimir Khovaylo Magnetic and Transport Properties of Mn_2FeSn

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12:20 12:40	Dr. Larissa M. Feitosa Synthesis of CoMnFeNi High Entropy Alloy Doped with In, Ga and Sn for Permanent Magnet Applications
12:40 13:00	Dr. Adler Gamzatov Inverse-direct Crossover Adiabatic Temperature Change in Cyclic Magnetic Fields in $\text{Ni}_{36.5}\text{Co}_{13.5}\text{Mn}_{35}\text{Ti}_{15}$ Alloy Near the Martensite-Austenite Phase Transition
13:00 14:00	Lunch 
Magnetism Chair: Prof. Makis Angelakeris	
14:00 14:30	Invited talk Dr. Anna Semisalova Correlating Enhanced Spin Pumping Efficiency and Atomic Dislocation Densities at Fe/Rh Bilayer Interfaces
14:30 15:00	Invited talk Dr. Mojtaba Alaei Accurate Derivation of Exchange Interactions from DFT: Mapping Methods, Supercell Optimization, and Functional Benchmarking
15:00 15:20	Dr. Nataliya Pugach Ferromagnetic Resonance at Superconducting Proximity Effect
15:20 15:40	Dr. Evgeny Mashkovich Terahertz-Driven Exchange Mode in a Ferrimagnetic Cavity
15:40 16:00	Dr. Khachatur Kirakosyan Dextran Coated Iron Oxide Nanoparticles: Magnetic Hyperthermia and Cytotoxicity
16:00 16:30	Closing Ceremony
Posters' List	
1	<u>A.G. Gamzatov</u>, N.Z. Abdulkadirova, P. Igoshev, A.M. Aliev, J. Wang, F. Hu Magnetic Phase Separation in $\text{La}_{0.8}\text{Pr}_{0.2}\text{Fe}_{13.7}\text{Si}_{1.3}$ -Hd Alloys Induced by Long-term Exposure to Cyclic Magnetic Fields
2	<u>K.R. Erager</u>, V.V. Sokolovskiy, V.D. Buchelnikov Phase Stability, Structure and Magnetic Properties of Ni-Co-Mn-Ti Heusler Alloys
3	<u>N.Z. Abdulkadirova</u>, A.G. Gamzatov, A.T. Kadirbardeev, A.M. Aliev, Yuan Lin, Jing Wang, Feng-xia Hu Stability of Adiabatic Temperature Change of $\text{La}_{0.7}\text{Ce}_{0.3}\text{Fe}_{11.45}\text{Mn}_{0.2}\text{Si}_{1.35}$ Alloys under Long-term Exposure to Cyclic Magnetic Fields
4	<u>M.V. Bakhmetiev</u>, R.B. Morgunov, A.I. Chernov Spin Diffusion Length in NiFe/Spacer/IrMn Structures with Varied Spacer Thickness Ta and Cu
5	<u>S. Singla</u> Rotation-Induced Abrikosov Vortex Dynamics: Theoretical Framework and Applications in

	Neuromorphic Computing
6	<u>S. Mohammadi</u>, A. Shokri Electronic Characterization of Intercalated Magnetic Semiconductor Layered Heterostructures for Spin-enhanced Photovoltaics
7	<u>M.A. Koliushenkov</u>, A.A. Amirov, T.R. Nizamov Stimulus-sensitive Core-shell Structures for Magnetically Controlled Drug Delivery
8	<u>A.A. Semiannikova</u>, A.V. Lukoyanov, V.Yu. Irkhin, E.D. Chernov, E.I. Shreder, A.A. Markin, A.V. Protasov, E.B. Marchenkova, V.V. Marchenkov Electronic Structure, Electronic and Magnetic Properties of $\text{Co}_{2-x}\text{Mn}_{1+x}\text{Al}$ ($x = 0; 0,25; 0,5; 0,75; 1$) Heusler Alloys
9	<u>S. T. Pashayan</u>, N.V. Tarasenko, V.G. Kornev, V.M. Anishchik, S.V. Zlotski Effect of Transition Metals Doping on the Properties of Copper Oxide-based Nanostructures
10	<u>A. Malvavina</u>, S. Pokrovskii, I. Martirosyan Influence of Artificial Pinning Centers on Normal State Transition in HTS Tapes under the Action of Short Current Pulses
11	<u>A.A. Kameney</u>, A.M. Makarevich, P.N. Degtyarenko, V.N. Chepikov Study of the Influence of the Density of Ceramic Targets on the Superconducting Properties of the $\text{YBa}_2\text{Cu}_3\text{O}_7$ HTSC Conductor
12	<u>S.L. Skornyyakov</u>, A.S. Belozarov, A.A. Katanin, V.I. Anisimov Effect of Coulomb Correlations on the Electronic Structure, Magnetic and Superconducting Properties of Iron and Iron-based Compounds
13	<u>M.A. Grebenuik</u>, G.M. Shutov, D.O. Poletaev, A.R. Oganov Ternary Superconducting Hydrides in Ca-Y-H System
14	<u>Z. Dastani</u>, A. Vedadiyan, A. Khademi, M. R. Mohammadizadeh Design and Numerical Simulation of 1 Tesla High-Temperature Superconducting Magnet

Thursday, 11.09.2025, 09:00 - 19:00 **Excursion**

