

CONFERENCE PROGRAM

Time is specified for the Time Zone UTC/GMT+3, Eastern European Time

MONDAY, 3rd of JUNE

9:50-10:00 **Opening Remarks: Director of the B. Verkin ILTPE of NAS of Ukraine,
Corresponding Member of NAS of Ukraine Prof. Yurii Naidyuk
and
Chair of Organizing Committee Diana Hurova**

PLENARY LECTURES OF INVITED SPEAKERS

Chair *Valentin Koverya*

10:00-10:30 **Desorption of excited atoms via bi-exciton creation from solid Ne surfaces by
electron impact**

Issei Kawada¹, Takayuki Tachibana^{1,2} and Takato Hirayama^{1,2}

¹ *Department of Physics, Rikkyo University, Tokyo, Japan*

² *Research Center for Measurements in Advanced Science, Rikkyo University, Tokyo, Japan*

10:30-11:00 **Quantum Scaling for the Metal-Insulator Transition in a Two-Dimensional
Electron System**

V. Kagalovsky¹, S.V. Kravchenko², D. Nemirowsky¹

¹ *Shamoon College of Engineering, Beer-Sheva, Israel*

² *Physics Department, Northeastern University, Boston, Massachusetts, USA*

ELECTRONIC PROPERTIES OF CONDUCTING AND SUPERCONDUCTING SYSTEMS

Chair *Valentin Koverya*

11:00-11:15 **Topological features and transport properties of Sr₂FeMoO₆ double perovskite
S. M. Konoplyuk, M. M. Krupa, Yu. B. Skyrta**

Institute of magnetism of NAS of Ukraine and MES of Ukraine, Kyiv, Ukraine

11:15-11:30 **Effect of dysprosium trioxide on the structural and electrical properties of
TI-1223 HTS**

I. R. Metskhvarishvili^{1,2}, G. N. Dgebuadze¹, D. L. Surmanidze^{1,3}, T. E. Lobzhanidze³,
B. G. Bendeliani¹, V. M. Gabunia^{1,4}, M. R. Metskhvarishvili⁵, D. A. Jishiashvili^{1,6}

¹ *Ilia Vekua Sukhumi Institute of Physics and Technology, Laboratory of Cryogenic Technique and Technologies, Tbilisi, Georgia*

² *Georgian Technical University, Faculty of Informatics and Control Systems, Department of Microprocessor and Measurement Systems, Tbilisi, Georgia*

³ *Ivane Javakhishvili Tbilisi State University, Faculty of Exact and Natural Sciences, Department of Chemistry, Tbilisi, Georgia*

⁴ *Petre Melikishvili Institute of Physical and Organic Chemistry of the Iv. Javakhishvili Tbilisi State University, Tbilisi, Georgia*

⁵ *“Talga” Institute of Georgian Technical University, Tbilisi, Georgia*

⁶ *V. Chavchanidze Institute of Cybernetics of the Georgian Technical University, Tbilisi, Georgia*

11:30-11:45 New states of Fermi superliquid with conformational degrees of freedom

M. Yu. Kovalevsky¹, A. A. Rozhkov²

¹NSC "Kharkiv Institute of Physics and Technology", Kharkiv, Ukraine

²National Technical University Kharkiv Polytechnical Institute, Kharkiv, Ukraine

11:45-12:00 Influence of strong electron irradiation on fluctuation conductivity and pseudogap in YBa₂Cu₃O_{7-δ} single crystals

A. L. Solovjov^{1,2}, M. V. Shytov¹, E. V. Petrenko¹, L. V. Bludova¹, R. V. Vovk³, K. Rogacki²

¹B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

²Institute for Low Temperatures and Structure Research, Wroclaw, Poland

³Department of Physics, V. N. Karazin Kharkiv National University, Kharkiv, Ukraine

12:00-12:15 A detailed investigation of anomalies on the temperature dependences of the electrical resistance of Bi_{88.08}Mn_{11.92} in fields up to 90 kOe

V. M. Yarovyi¹, K. Rogacki², A. V. Terekhov¹, E. Lähderanta³, A. L. Solovjov^{1,2}

¹B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

²Institute for Low Temperatures and Structure Research, Wroclaw, Poland

³Lappeenranta University of Technology, School of Engineering Science, Lappeenranta, Finland

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**12:15-13:00**

**BREAK**  
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PLENARY LECTURES OF INVITED SPEAKERS

Chair Yuliya Savina

13:00-13:30 Quantum transport and optics theory and simulations with applications to noninvasive medical diagnostics and novel photonic functionalities

M.F. Pereira^{1,2}, Humaira Zafar¹ and A. Apostolakis²

¹Department of Physics, Khalifa University of Science and Technology, UAE

²Institute of Physics, Czech Academy of Sciences, Czech Republic

13:30-14:00 Analysis, design, and applications of polygon mirror-based laser scanners

V.-F. Duma¹⁻³ and M.-A. Duma⁴

¹3OM Optomechatronics Group, Faculty of Engineering, Aurel Vlaicu University of Arad, Arad, Romania

²Faculty of Electronics, Telecommunications, and Information Technology, Polytechnic University of Timisoara, Timisoara, Romania

³National University of Science and Technology POLITEHNICA Bucharest, Center of Research and Development for Mechatronics, Bucharest, Romania

⁴School of Science and Engineering, University of Groningen, The Netherlands

OPTICS, PHOTONICS AND OPTICAL SPECTROSCOPY

Chair Yuliya Savina

14:00-14:15 Luminescent and scintillation properties of CsPbCl₃ perovskite crystal

V. Kolomiets, V. Kapustianyk

I. Franko National University of Lviv, Physics Department, Lviv, Ukraine

14:15-14:30 Peculiarities of J-Aggregate Formation in Liquid Crystal Matrices: Enhancing Stability and Optoelectronic Characteristics

I. Yu. Ropakova¹, O. M. Samoilo¹, I. I. Grankina¹, S. L. Yefimova¹, O. V. Sorokin¹, N. A. Kasian¹, S. S. Hrankina^{1,2}, L. N. Lisetski¹

¹ Institute for Scintillation Materials of NAS of Ukraine Kharkiv, Kharkiv 61072, Ukraine

² Kharkiv National Medical University, Kharkiv, Ukraine

14:30-14:45 Engineering optical metasurfaces for far- and near-field applications

A. A. Hrinchenko¹, O. Yu. Demianyk¹, S. Yu. Polevoy², A. I. Ovcharenko¹, V. R. Tuz¹, K. E. Nemchenko¹, O. Y. Yermakov¹

¹ V. N. Karazin Kharkiv National University, Kharkiv, Ukraine

² O. Ya. Usikov Institute for Radiophysics and Electronics NAS of Ukraine, Kharkiv, Ukraine

14:45-15:00 Polaritons in the magnetic-«epsilon-near-zero» multilayers, with noncollinear orientation of magnetizations

A. F. Bukhanko

Donetsk Institute for Physics and Engineering Named after O.O. Galkin, Kyiv, Ukraine

15:00-15:30

BREAK

PLENARY LECTURES OF INVITED SPEAKERS

Chair *Oleksii Konotop*

15:30-16:00 Optical emission studies of C₂ formation upon electron irradiation of Ar matrices doped with CH₄

M. A. Bludov, I. V. Khyzhniy, S. A. Uyutnov, E. V. Savchenko

B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

QUANTUM LIQUIDS AND QUANTUM CRYSTALS, CRYOCRYSTALS

Chair *Oleksii Konotop*

16:00-16:15 Influence of acoustic emission on the resonance properties of a quartz tuning fork vibrating in superfluid ³He - ⁴He mixtures

V. K. Chagovets, V. E. Syvokon, S. S. Sokolov

B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

16:15-16:30 Two-step energy dissipation of oscillating tuning fork in ³He-⁴He superfluid mixtures

J. Amrit¹, N. Herashchenko², K. Nemchenko², S. Rogova², T. Vikhtinskaya²

¹ LISN, CNRS, Université Paris-Saclay, Orsay, France

² V. N. Karazin Kharkiv National University, Kharkiv, Ukraine

16:30-16:45 Phase composition of large substrate-free binary Ar-Kr clusters

O. P. Konotop, O. G. Danylchenko

B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

16:45-17:00

BREAK

17:00-18:40

POSTER SESSION (1 AND 4 SECTIONS)

ELECTRONIC PROPERTIES OF CONDUCTING AND SUPERCONDUCTING SYSTEMS

Chairs *Valentin Koverya and Oleksii Konotop*

17:00-17:15 All participants of **Stage 1** (short presentation one by one for 1,5 – 2 minutes)

17:15-17:30 **Breakout Rooms Stage 1**

P1 **The acoustoelectric transformation in the mixed state in superconducting chalcogenides $\text{FeSe}_{1-x}\text{S}_x$ ($x=0.075$)**

G. A. Zvyagina¹, V. D. Fil¹, I. V. Bilych¹, K. R. Zhekov¹, D. V. Fil^{2,3}

¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

² Institute for Single Crystals, NAS of Ukraine, Kharkiv, Ukraine

³ V.N. Karazin Kharkiv National University, Kharkiv, Ukraine

P2 **Combined electrical breakdown of a dielectric nanolayer between thin film electrodes**

S. I. Bondarenko, A. V. Krevsun, V. P. Koverya

B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

P3 **The formation of IV-characteristics of long Josephson junctions at zero-field steps**

A. Grib, O. Chykina

V. N. Karazin National University, Kharkiv, Ukraine

P4 **Experimental evidences for a favor of the staged nature of temperature evolution of the HTSC's pseudogap state**

N. A. Azarenkov, V. A. Frolov, E. V. Karaseva, V. I. Sokolenko, A. V. Poida

National Science Center Kharkiv Institute of Physics and Technology, Kharkiv, Ukraine

P5 **Quantum capacitance of qubit-based systems**

O. Y. Kitsenko^{1,2}, S. N. Shevchenko¹

¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

² V. N. Karazin Kharkiv National University, Kharkiv, Ukraine

P6 **Electron transport in one dimensional disordered lattice**

M. V. Klimov

V. N. Karazin Kharkiv National University, Kharkiv, Ukraine

P7 **Pressure effect on electronic structure and magnetic properties of LaFeAsO**

A. S. Panfilov, I. P. Kobzar, G. E. Grechnev, A. V. Fedorchenko

B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

17:35-17:50 All participants of **Stage 2** (short presentation one by one for 1,5 – 2 minutes)

17:50-18:05 **Breakout Rooms Stage 2**

P8 **Edge states at the boundary of hexagonal and Lieb lattices in a quantizing magnetic field**

I. V. Kozlov, Yu. A. Kolesnichenko

B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

- P9** **Manifestation of homogeneous superconductivity in single-crystalline [100] boron-doped diamond film near Superconductor-Insulator transition**
O. Onufrienko¹, P. Szabó¹, V. V. Moshchalkov², P. Samuely¹, G. Zhang^{3,4} and T. Samuely¹
¹ Centre of Low Temperature Physics, Institute of Experimental Physics, Slovak Academy of Sciences and Faculty of Science, P.J. Šafárik University, Košice, Slovakia
² Department of Physics and Astronomy, KU Leuven, Heverlee, Belgium
³ National Key Laboratory of Science and Technology on Advanced Composites in Special Environments, Harbin Institute of Technology, Harbin, China
⁴ Zhengzhou Research Institute, Harbin Institute of Technology, Zhengzhou, China
- P10** **Study of the pseudogap temperature dependence in YBCO films in magnetic fields up to 8 T**
E. V. Petrenko¹, L. V. Bludova¹, A. V. Terekhov¹, A. L. Solovjov¹, K. Rogacki²
¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
² Institute for Low Temperatures and Structure Research, Wrocław, Poland
- P11** **Experimental verification of the occurrence of rectified voltage (“diode effect”) in multiply connected superconducting structures**
A. G. Sivakov¹, O. G. Turutanov^{2,1}, A. S. Pokhila¹, A. V. Krevsun¹, A. E. Kolinko¹, and S. I. Bondarenko¹
¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
² Department of Experimental Physics, Comenius University, Bratislava, Slovakia
- P12** **Hopping Hall effect in multi-walled carbon nanotubes**
R. M. Rudenko¹, O. O. Voitsihovska¹, A. A. Abakumov², V. M. Poroshin¹
¹ Institute of Physics, Kyiv, Ukraine
² L.V. Pisarzhevskii Institute of Physical Chemistry, Kyiv, Ukraine
- P13** **Controlling the efficiency of the superconducting “diode effect” using microwave radiation**
A. G. Sivakov¹, O. G. Turutanov^{2,1}, A. S. Pokhila¹, A. E. Kolinko¹, M. Grajcar^{2,3}
¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
² Department of Experimental Physics, Comenius University, Bratislava, Slovakia
³ Institute of Physics, Slovak Academy of Sciences, Bratislava, Slovakia
- P14** **Josephson weak link based on proximity effect in long bimetallic thin-film bridge**
O. G. Turutanov^{1,2}, A. G. Sivakov², A. S. Pokhila², M. Grajcar^{1,3}
¹ Department of Experimental Physics, Comenius University, Bratislava, Slovakia
² B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
³ Institute of Physics, Slovak Academy of Sciences, Bratislava, Slovakia

QUANTUM LIQUIDS AND QUANTUM CRYSTALS, CRYOCRYSTALS

Chairs Valentin Koverya and Oleksii Konotop

18:10-18:25 All participant of **Stage 3** (short presentation one by one for 1,5 – 2 minutes)

18:25-18:40 **Breakout Rooms Stage 3**

- P15** **Structural characteristics of solid nitrogen. Isotopic effect**
N. A. Aksenova¹, D. E. Hurova², N. N. Galtsov²
¹ *V. N. Karazin Kharkiv National University, Kharkiv, Ukraine*
² *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*
- P16** **Observation of new band in stimulated luminescence of solid nitrogen**
M. A. Bludov, I. V. Khyzhniy, S. A. Uytunov, E. V. Savchenko
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
- P17** **The influence of a point impurity on the phonon spectrum of a chain of noble gas atoms adsorbed on a carbon nanobundle**
E. V. Manzhelii, S. B. Feodosyev, E. S. Syrkin
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
- P18** **Observation of dynamic- and thermo- anomalies at surface electron to surface anions transition over helium film on structured substrate**
V. A. Nikolaenko, A. V. Smorodin, E. Ya. Rudavskii and S. S. Sokolov
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
- P19** **Four-particle states of low-dimensional fermions with three-body interaction**
V. Polkanov, V. Pastukhov
Professor Ivan Vakarchuk Department for Theoretical Physics, Ivan Franko National University of Lviv, Lviv, Ukraine
- P20** **Heat capacity features of epoxy-based composites with different graphene oxide contributions at low temperatures**
O. O. Romantsova^{1,2}, D. Szewczyk², A. Jeżowski², Yu. Horbatenko¹,
O. Krivchikov^{1,2}, M. Vinnikov¹, S. Cherednichenko¹
¹ *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*
² *Institute of Low Temperatures and Structure Research, Wrocław, Poland*
- P20a** **Thermal conductivity of ABS polymer composite with 0.5 wt% of the thermally reduced graphene oxide**
V. V. Sagan, A. I. Krivchikov, V. A. Konstantinov
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

TUESDAY, 4th of JUNE

PLENARY LECTURES OF INVITED SPEAKERS

Chair *Maksym Barabashko*

10:00-10:30 **Electronic and Reactive Properties of Nano- and Sub-nano Clusters**
Tore Brinck
Department of Chemistry, CBH, KTH Royal Institute of Technology, Stockholm, Sweden

NANOPHYSICS AND NANOTECHNOLOGIES

Chair *Maksym Barabashko*

10:30-10:45 Rate-equation approach for a driven two-electron four-level double-quantum dot

M. P. Liul^{1,2}, A. I. Ryzhov^{1,2}, S. N. Shevchenko¹

¹ *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

² *Theoretical Quantum Physics Laboratory, Cluster for Pioneering Research, RIKEN, Wakoshi, Saitama, Japan*

10:45-11:00 Selective uptake and desorption of carbon dioxide in carbon honeycombs

D. G. Diachenko, N. V. Krainyukova

B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

11:00-11:15 Aluminum uptake in carbon honeycomb

M. A. Kabanenko, D. G. Diachenko, N. V. Krainyukova

B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

11:15-11:30 Low-temperature ultrasonic investigation of severe deformed high-purity titanium

V. S. Klochko, A. V. Kornijets, V. I. Sokolenko, V. I. Spitsyna, M. A. Shulgin, I. F. Kislyak, I. V. Kolodiy, O. O. Kondratov, T. M. Tikhonovska

National Scientific Center "Kharkov Institute of Physics and Technology", Kharkiv, Ukraine

11:30-11:45 Impact of pressure on electrical properties of silver nanofilms

S. Udachan¹, S. B. Kolavekar¹, N. H. Ayachit¹, L. A. Udachan², S. Siddanna², S. S. Kolkundi³, K. N. Kumar⁴, S. Ramya⁵, S. Veeresh⁵

¹ *Department of Physics, School of Advanced Sciences, KLE Technological University, Hubballi-580031, India*

² *S. S. Tegnoor Degree College, Kalaburagi-585105, India*

³ *Government First Grade College, Shahapur-585223, Yadgir, India*

⁴ *Department of Physics and Center for Nanomaterials and MEMS, Nitte Meenakshi Institute of Technology, Yelahanka, Bangalore-560064, India.*

⁵ *Shree Sangam Vidya Mandir, Kalburagi, Karnataka, India.*

11:45-12:00 Interpolation expressions for dependencies of heat transfer parameters on the boundary diffusivity factor in nanoribbons

J. Amrit¹, K. Nemchenko², Ye. Nemchenko, S. Rogova², M. Spotar², T. Vikhtinskaya²

¹ *LISN, Université Paris-Saclay, CNRS, Orsay, France*

² *V. N. Karazin Kharkiv National University, Kharkiv, Ukraine*

12:00-12:15 Heat transfer in 3D samples of definite cross-section at diffusive boundary scattering

J. Amrit¹, K. Nemchenko², Ye. Nemchenko², S. Rogova², T. Vikhtinskaya²

¹ *LISN, Université Paris-Saclay, CNRS, Orsay, France*

² *V. N. Karazin Kharkiv National University, Kharkiv, Ukraine*

12:15-12:30 Iterative analytical solution to the problem of heat flow in a two-dimensional conductor

J. Amrit¹, K. Nemchenko², M. Spotar², T. Vikhtinskaya²

¹ *LISN, Université Paris-Saclay, CNRS, Orsay, France*

² *V.N.Karazin Kharkiv National University, Kharkiv, Ukraine*

12:30-13:30

BREAK

PLENARY LECTURES OF INVITED SPEAKERS

Chair *Sergii Poperezhai*

13:30-14:00 Challenging properties of magnetic shape memory alloys

V. A. L'vov^{1,2}

¹ *Institute of Magnetism NAS of Ukraine and MES of Ukraine, Kyiv, Ukraine*

² *Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*

14:00-14:30 Controlling multimagnon processes in magnetic nanostructures

R. Verba¹, J. Kharlan^{1,2}, V. Borynskyi¹, D. Slobodianiuk^{3,1}, A. Etesamirad⁴,
I. Barsukov⁴

¹ *Institute of Magnetism NAS of Ukraine and MES of Ukraine, Kyiv, Ukraine,*

² *Institute of Spintronics and Quantum Information, Adam Mickiewicz University, Poznań, Poland*

³ *Institute of High Technologies, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine,*

⁴ *Physics and Astronomy, University of California, Riverside, USA*

MAGNETISM AND MAGNETIC MATERIALS

Chair *Sergii Poperezhai*

14:30-14:45 Effect of higher-order exchange interactions for skyrmion stability in monolayer MnSeTe

Megha Arya¹, Lionel Calmels¹, Rĭmi Arras¹, Soumyajyoti Haldar², Stefan Heinze²,
and Dongzhe Li¹

¹ *CEMES, Universitĭ de Toulouse, CNRS, Toulouse, France*

² *Institute of Theoretical Physics and Astrophysics, University of Kiel, Kiel, Germany*

14:45-15:00 Ni-Fe-based layered double hydroxides: cluster glass and low-temperature magnetic phase separation

A. V. Fedorchenko¹, E. L. Fertman¹, Yu. G. Pashkevich², D. E. L. Vieira³,
E. ĀiřmĀr⁴, V. TkĀĀ⁴, R. Tarasenko⁴, A. Feher⁴, A. N. Salak³

¹ *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

² *O. Galkin Donetsk Institute for Physics and Engineering, Kyiv, Ukraine*

³ *CICECO – Aveiro Institute of Materials, University of Aveiro, Aveiro, Portugal*

⁴ *Institute of Physics, Faculty of Science, P.J. řafĀrik University in Kořice, Kořice, Slovakia*

15:00-15:15 Nano-Oscillator Based on a 3D Non-Uniform Antiferromagnetic Spin Texture

V. S. Gerasimchuk¹, Yu. I. Gorobets^{1,2}, O. Yu. Gorobets¹, I. V. Gerasimchuk^{1,2}

¹ *National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, Kyiv, Ukraine*

² *Institute of Magnetism, NAS of Ukraine and MES of Ukraine, Kyiv, Ukraine*

15:15-15:30 Multiphonon Raman scattering in BaBiO₃

A. Glamazda^{1,4}, V. Gnezdilov^{1,2}, P. Lemmens^{2,3}

¹ *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, 61103, Ukraine*

² *Institute for Condensed Matter Physics, TU-Braunschweig, Braunschweig, Germany*

³ *Laboratory for Emerging Nanometrology and International Graduate School of Metrology, Braunschweig, Germany*

⁴ *V. N. Karazin Kharkiv National University, Kharkiv, Ukraine*

- 15:30-15:45** **Quasi-two-dimensional $S = 1/2$ antiferromagnet $\text{Cu}[\text{C}_6\text{H}_2(\text{COO})_4][\text{C}_2\text{H}_5\text{NH}_3]_2$: evidence of field-induced Berezinskii–Kosterlitz–Thouless transition**
I. Kozin¹, R. Tarasenko¹, A. Orendáčová¹, E. Čížmár¹, P. Danylchenko¹, V. Tkáč¹, and M. Orendáč¹
¹ *Institute of Physics, Faculty of Science, P.J. Šafárik University in Košice, Košice, Slovakia*
- 15:45-16:00** **Locked domain structure of magnetostrictive FeTb/Fe multilayers via the Fe sublayers**
Iryna Lukienko^{1,2}, Vojtěch Uhlíř¹
¹ *Central European Institute of Technology, Brno University of Technology, Brno, Czechia*
² *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*
- 16:00-16:15** **Single-layer methods for three-dimensional tensor networks**
I. V. Lukin^{1,2}, A. G. Sotnikov^{1,2}
¹ *Karazin Kharkiv National University, Kharkiv, Ukraine*
² *Akhiezer Institute for Theoretical Physics, NSC KIPT, Kharkiv, Ukraine*
- 16:15-16:30** **Spectroscopic signatures of cross-Kerr coupling in a vibrating magnetic beam**
A. M. Sokolov¹, T. T. Heikkilä²
¹ *Institute of Physics of the National Academy of Sciences, Kyiv*
² *Department of Physics and the Nanoscience Center of the University of Jyväskylä, Jyväskylä, Finland*
- 16:30-16:45** **Electrical and magnetic properties of $(\text{C}_2\text{H}_5\text{NH}_3)_2\text{CuCl}_4$ magnetic multiferroic at low temperatures**
O. I. Vira¹, Yu. Eliashevskyy¹, V. Kapustianyk¹, R. Tarasenko²
¹ *Ivan Franko National University of Lviv, Faculty of Physics, Lviv, Ukraine*
² *Pavol Jozef Safarik University, Institute of Physics, Faculty of Science, Kosice, Slovakia*

16:45-17:15

BREAK

17:15-19:30

POSTER SESSION (2 AND 3 SECTIONS)

MAGNETISM AND MAGNETIC MATERIALS

Chairs *Sergii Poperezhai and Yuliya Savina*

17:15-17:30 **All participants of Stage 1 (short presentation one by one for 1,5 – 2 minutes)**

17:30-17:45 **Breakout Rooms Stage 1**

P21 **Features of magnetic properties of $\alpha\text{-Cr}_3(\text{PO}_4)_2$ crystal**
O. Bludov¹, Yu. Savina¹, V. Pashchenko¹, M. Kobets¹, T. Zajarniuk²,
M.U. Gutowska², A. Szewczyk²

¹ *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

² *Institute of Physics of PAS, Warsaw, Poland*

P22 **Temperature changes in magnetostatic properties of Al-doped yttrium iron garnets**
V. Yu. Borynskyi¹, A. F. Kravets¹, D. L. Popadiuk¹, Yu. Yu. Shlapa², S. O. Solopan²,
A. G. Belous², A. I. Tovstolytkin

¹ *Institute of Magnetism of the NAS of Ukraine and MES of Ukraine, Kyiv, Ukraine*

² *V.I. Vernadsky Institute of General and Inorganic Chemistry, Kyiv, Ukraine*

- P23 Lattice dynamics in the thiospinel CuIr_2S_4 : Raman spectroscopic studies across the metal-insulator transition**
A. Glamazda^{1,3}, V. Gnezdilov^{1,2}, V. Tsurkan^{4,5}, P. Lemmens^{2,6}
¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
² Institute of Condensed Matter Physics, TU Braunschweig, Braunschweig, Germany
³ V. N. Karazin Kharkiv National University, Kharkiv, Ukraine
⁴ Center for Electronic Correlations and Magnetism, University of Augsburg, Augsburg, Germany
⁵ Institute of Applied Physics, Moldova State University, Chisinau, Moldova
⁶ Laboratory of Emerging Nanometrology LENA, Braunschweig, Germany
- P24 Magnetic Properties of Low-dimensional Spin System Formed by Spin-1/2 XX Chains Coupled through Ising Spins**
E. V. Ezerskaya, A. O. Kabatova, S. Ye. Kononenko
V. N. Karazin Kharkiv National University, Kharkiv, Ukraine
- P25 On the Energy Spectrum and Magnetic Properties of Quasi-One-Dimensional Branched Spin Chain**
E. V. Ezerskaya, D. D. Kolesnyk
V. N. Karazin Kharkiv National University, Kharkiv, Ukraine
- P26 Low Temperature Magnetic Properties of Anisotropic Spin Ladder Systems**
V. O. Cheranovskii, E. V. Ezerskaya, S. Ye. Kononenko
V. N. Karazin Kharkiv National University, Kharkiv, Ukraine
- P27 Tunnel Magnetic Contacts with Perpendicular Anisotropy of Magnetic Electrodes as Promising Elements for Recording Information**
M. M. Krupa
Institute of Magnetism of the NAS of Ukraine and MES of Ukraine, Kyiv, Ukraine
- 17:50 - 18:05 All participants of Stage 2 (short presentation one by one for 1,5 – 2 minutes)**
- 18:05-18:20 Breakout Rooms Stage 2**
- P28 The possibility of existence the magnetic field induced structural phase transition in $\text{KEr}(\text{MoO}_4)_2$**
N. Nesterenko¹, K. Kutko¹, B. Bernáth², D. Kamenskyi³
¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
² High Field Magnet Laboratory (HFML - EMFL) Radboud University, Nijmegen, The Netherlands
³ Experimental Physics V, Center for Electronic Correlations and Magnetism, Institute of Physics, University of Augsburg, Augsburg, Germany
- P29 Magnetic susceptibility as a tool for studying the phenomenon of mixed valence in SmB_6**
A. A. Lyogenkaya¹, A. S. Panfilov¹, V. A. Desnenko¹, G. E. Grechnev¹, and N. Yu. Shitsevalova²
¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
² Institute for Problems of Materials Science of the NAS of Ukraine, Kyiv, Ukraine
- P30 Position of optical axes of magnetized along tetragonal axis antiferromagnetic garnet $\text{Ca}_3\text{Mn}_2\text{Ge}_3\text{O}_{12}$**
O. V. Bibik², O. V. Myloslavska¹, Yu. Kharchenko¹, M. Kharchenko¹
¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
² Georgia Institute of Technology | GT · School of Aerospace Engineering Atlanta, Georgia, USA
- P31 Spectroscopic peculiarities of a trigonal $\text{TbAl}_3(\text{BO}_3)_4$ single crystal**
A. V. Peschanski¹, A. Yu. Glamazda^{1,2}
¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
² V. N. Karazin Kharkiv National University, Kharkiv, Ukraine

- P32** **Determination of Nd-Fe exchange interaction signs in excited states of Nd³⁺ in NdFe₃(BO₃)₄ crystal using optical spectroscopy**
V. G. Piryatinskaya, V. S. Kurnosov, I. S. Kachur
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
- P33** **Impact of the magnetic Fe³⁺ ions substitution by nonmagnetic Ga³⁺ on the properties of holmium iron borate**
Yu. Savina¹, O. Bludov¹, V. Pashchenko¹, T. Zajarniuk², A. Lynnyk²,
M.U. Gutowska², A. Szewczyk²
¹*B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*
²*Institute of Physics, Polish Academy of Sciences, Warsaw, Poland*
- P34** **Nickel-zinc spinel ferrites: Synthesis and magnetic characterization**
V. O. Zamorskyi¹, A. F. Kravets¹, D. L. Popadiuk¹, Yu. Yu. Shlapa², S. O. Solopan²,
A.G. Belous², A. I. Tovstolytkin¹
¹*Institute of Magnetism of the NAS of Ukraine and MES of Ukraine, Kyiv, Ukraine*
²*V.I. Vernadsky Institute of General and Inorganic Chemistry of the NAS of Ukraine, Kyiv, Ukraine*

OPTICS, PHOTONICS AND OPTICAL SPECTROSCOPY

Chairs *Sergii Poperezhai and Yuliya Savina*

18:25-18:40 **All participants of Stage 3 (short presentation one by one for 1,5 – 2 minutes)**
18:40-18:55 **Breakout Rooms Stage 3**

- P35** **Temperature-dependent operation of laser passive Q-switches based on polyurethane matrices**
T. Bezrodna¹, V. Bezrodnyi¹, A. Negriyko¹, L. Kosyanchuk², O. Antonenko², V. Nesprava¹
¹*Institute of Physics NAS of Ukraine, Kyiv, Ukraine*
²*Institute of Macromolecular Chemistry NAS of Ukraine, Kyiv, Ukraine*
- P36** **First-principles investigation of optical features for gyrotropic α-Hg₃S₂Cl₂ polymorph**
O. V. Bokotey¹, T. V. Vu², O. O. Bokotey¹, A. G. Slivka¹
¹*Faculty of Physics, Uzhhorod National University, Ukraine*
²*Laboratory for Computational Physics, Institute for Computational Science and Artificial Intelligence, Van Lang University, Ho Chi Minh City, Vietnam*
- P37** **Spectral characteristics of three-particle ionic molecular system of the exotic Carbon atom in one-dimensional space**
A. I. Haysak¹, M. I. Haysak²
¹*Uzhhorod National University, Uzhhorod, Ukraine*
²*Institute of Electron Physics NAS of Ukraine, Uzhhorod, Ukraine*
- P38** **Emission of monochromatic sub-THz radiation by IR-active phonons in KY(MoO₄)₂**
D. Kamenskyi^{1,2,3}, K. Vasin³, K. Kutko⁴, V. Khrustalyov⁴, S. G. Pavlov¹,
H.-W. Hübers^{1,2}
¹*Institute of Optical Sensor Systems, German Aerospace Center (DLR), Berlin, Germany*
²*Department of Physics, Humboldt-Universität zu Berlin, Berlin, Germany*
³*Experimental Physics V, Center for Electronic Correlations and Magnetism, Institute of Physics, University of Augsburg, Augsburg, Germany*
⁴*B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

- P39** **Enhancement of local fields in the vicinity of biconic and bipyramidal metal nanoparticles**
A. V. Korotun^{1,2}
¹ *National University Zaporizhzhia Politechnic, Zaporizhzhya, Ukraine*
² *G.V. Kurdyumov Institute for Metal Physics of the NAS of Ukraine, Kyiv, Ukraine*
- P40** **Frequency splitting of surface plasmon resonance in a cylindrical shell of variable thickness**
R. O. Malysh¹, A. V. Korotun^{1,2}, I. M. Titov¹
¹ *National University Zaporizhzhia Politechnic, Zaporizhzhia, Ukraine*
² *G.V. Kurdyumov Institute for Metal Physics of the NAS of Ukraine, Kyiv, Ukraine*
- P41** **Methodology for studying the properties of gas discharge plasma in mixtures of inert gases with chalcogen atoms vapours**
A. General, E. Svitlichnyi
Institute of Electron Physics of NAS of Ukraine, Uzhhorod, Ukraine
- 19:00 - 19:15** All participants of **Stage 4** (short presentation one by one for 1,5 – 2 minutes)
- 19:15-19:30** **Breakout Rooms Stage 4**
- P42** **Radiation efficiency of an ensemble of disk-shaped plasmonic nanoparticles**
N. I. Pavlyshche¹, A. V. Korotun^{1,2}, V. P. Kurbatsky¹
¹ *National University Zaporizhzhia Politechnic, Zaporizhzhia, Ukraine*
² *G.V. Kurdyumov Institute for Metal Physics of the NAS of Ukraine, Kyiv, Ukraine*
- P43** **Color centers in undoped lithium fluoride LiF**
O.M. Pop, V.I. Roman, I.H. Megela, V.T. Maslyuk, I.V. Pylypchynets,
E.V. Olejnikov, O.O. Papp
Institute of Electron Physics of NAS of Ukraine, Uzhhorod, Ukraine
- P44** **Time limits for measurement of gravitational waves with dynamical Casimir effect in solid-state detectors**
A. M. Sokolov
Institute of Physics of the National Academy of Sciences, Kyiv, Ukraine
- P45** **Optical response of chains of oblate metal nanospheroids on a dielectric substrate**
M. S. Maniuk¹, A. V. Korotun^{1,2}, V. P. Kurbatsky¹
¹ *National University Zaporizhzhia Politechnic, Zaporizhzhia, Ukraine*
² *G.V. Kurdyumov Institute for Metal Physics of the NAS of Ukraine, Kyiv, Ukraine*
- P46** **Experimental setup for spraying chalcogens onto a surface in a gas discharge**
A. Minya¹, E. Svitlichnyi²
¹ *Uzhgorod National University, Uzhgorod, Ukraine*
² *Institute of Electron Physics of NAS of Ukraine, Uzhhorod, Ukraine*
- P47** **Relevance and prospects for studying low-temperature photoluminescence of GO of various morphologies and its derivatives with impurities**
V. N. Zoryansky, P. V. Zinoviev
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, 61103, Ukraine

WEDNESDAY, 5th of JUNE

PLENARY LECTURES OF INVITED SPEAKERS

Chair Diana Hurova

10:00-10:30 Swift Ion Irradiation Related to Complex Organic Molecules in Cold Space Environments

P. Boduch, A. Domaracka, H. Rothard

Centre de Recherche sur les Ions, les Matériaux et la Photonique, Normandie Univ, ENSICAEN, UNICAEN, CEA, CNRS, CIMAP, Caen 14000, France

10:30-11:00 Contribution of mass spectrometry to molecular biophysics of nucleic acids

M. V. Kosevich

B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

BIOPHYSICS AND PHYSICS OF MACROMOLECULES

Chair Diana Hurova

11:00-11:15 Characterization of graphene oxide by Raman spectroscopy and atomic force microscopy

A. Glamazda^{1,2}, A. Linnik¹, O. Lytvyn³, V. Karachevtsev¹

¹*B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

²*V. N. Karazin Kharkiv National University, Kharkiv, Ukraine*

³*Borys Grinchenko Kyiv University, Kyiv, Ukraine*

11:15-11:30 Biopharmaceutical studies of a novel sedative drug based on glycine and tryptophan in model membrane medium: revealing of bioavailability and synergistic properties

O. V. Vashchenko¹, R. Ye. Brodskii², I. O. Davydova³, P. V. Vashchenko¹,
O. I. Ivaniuk³, O. A. Ruban³

¹*Institute for Scintillation Materials of NAS of Ukraine, Kharkiv, Ukraine*

²*Institute for Single Crystals of NAS of Ukraine, Kharkiv, Ukraine*

³*National University of Pharmacy, Kharkiv, Ukraine*

11:30-11:45 Electronic transport in composite film of reduced graphene oxide with molybdenum disulfide

N. V. Kurnosov¹, A. M. Plokhotnichenko¹, V. A. Karachevtsev¹

B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

11:45-12:00 Metal-dielectric metasurface sensing structure for IgG/glucose concentration determination in solutions

K. S. Kuznetsova¹, V. A. Pashynska^{1,2}, Z. E. Eremenko^{1,3}

¹*Usikov Institute for Radiophysics and Electronics of the NAS of Ukraine, Kharkiv Ukraine*

²*B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

³*Leibniz Institute for Solid State and Materials Research, Dresden, Germany*

12:00-12:15 Biologically significant intermolecular interactions of doxorubicin with phospholipids and supporting drug molecules

V. A. Pashynska¹, V. O. Karachevtsev¹, A. Gomory², L. Drahos²

¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

² Institute of Organic Chemistry, HUN-REN Research Center for Natural Sciences, Budapest, Hungary

12:15-12:30 Influence of structural defects in MoS₂ on interaction with biological molecules

T. Piddubnyi¹, S. Stepanian¹, L. Adamowicz²

¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

² Department of Chemistry and Biochemistry, University of Arizona, Tucson AZ, USA

12:30-12:45 Mathematical modeling of the freezing zone temperature dynamics of the hydrogel for cryoablation and cryotherapy applications

O. V. Ivakhnenko^{1,2}, S. N. Shevchenko¹, and O. F. Todrin³

¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

² Theoretical Quantum Physics Laboratory, Cluster for Pioneering Research, RIKEN, Wako, Saitama Japan

³ Institute for Problems of Cryobiology and Cryomedicine, Kharkiv, Ukraine

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**12:45-14:00**

**BREAK**  
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PLENARY LECTURES OF INVITED SPEAKERS

Chair Diana Hurova

14:00-14:30 War-derived nanohybrids composed of carbon-containing smoke nanoparticles, copper and sulphur compounds poses health hazard

G. Dovbeshko^{1,2}, O. Gnatyuk^{1,2}, V. Boiko^{1,2}, N. Kirsanova^{1,3}, O. Bezkrivnyi¹,
N. Pozdnyakova^{1,3}, W. Strek¹, T. Borisova^{1,3}

¹ Institute of Low Temperature and Structure Research, Wroclaw, Poland

² Institute of Physics of National Academy of Sciences of Ukraine, Kyiv, Ukraine

³ O.V. Palladin Institute of Biochemistry of NAS of Ukraine, Kyiv, Ukraine

14:30-15:00 DNA as an exemplary polymer

Oleg Krichevsky

Physics Department, Ben-Gurion University of the Negev, Beer-Sheva, Israel

OPTICS ROUND TABLE

Chair Maksym Barabashko

15:00-15:30 International opportunities for researchers: Light of your future career

Nataliia Mysko-Krutik

Ruhr-Universität, Bochum, Germany

15:30-16:00 Communicating Technical Expertise to Non-Technical Audiences

Olha Kravchuk

Kharkiv National University of Radio Electronics, Kharkiv, Ukraine

16:00-16:20 Photonics Cluster Ukraine
K. Gorokhovskiy
Public Union Photonics Cluster Ukraine, Kyiv, Ukraine

16:20-16:40 BREAK

16:40-19:00 POSTER SESSION (5 AND 6 SECTIONS)

NANOPHYSICS AND NANOTECHNOLOGIES

Chairs Maksym Barabashko and Diana Hurova

16:40-16:55 All participants of Stage 1 (short presentation one by one for 1,5 – 2 minutes)

16:55-17:10 Breakout Rooms Stage 1

P48 Aluminium doped ZnO thin films

V. V. Zaika, N. K. Shvachko, I. V. Sukhenko, V. L. Karbivskyy
G. V. Kurdyumov Institute for Metal Physics of NAS of Ukraine, Kyiv, Ukraine

P49 Modeling and calibration of the electrical features of submicron p-n and p-i-n junction structures based on Si and GaAs over a broad temperature.

J. Sh. Abdullayev, I. B. Sapaev
National Research University TIAME, Tashkent, Uzbekistan

P50 On the Energy Spectrum and Magnetic Properties of low-dimensional spin systems of complex topology

K. S. Dzhenzherova, O. S. Dzhenzherov, E. V. Ezerskaya, V. O. Kovalenko
V. N. Karazin Kharkiv National University, Kharkiv, Ukraine

P51 Influence of the defects on the behavior of the heat capacity of MWCNTs with Ø9.4 nm

M. I. Bagatskii¹, V. V. Sumarokov¹, M. S. Barabashko¹, A. I. Krivchikov¹,
A. Jeżowski², D. Szewczyk^{2,3}

¹ *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

² *W. Trzebiatowski Institute for Low Temperatures and Structure Research, Wroclaw, Poland*

³ *Low Temperature Laboratory, Condensed Matter Physics Department, Universidad Autónoma de Madrid, Madrid, Spain*

P52 Raman, UV-Vis, MS and IR Characterization of Molecular-Colloidal Solution of Hydrated Fullerenes C₆₀ Obtained Using Vacuum-Sublimation Cryogenic Deposition Method

R. M. Basnukaeva¹, S. V. Cherednichenko¹, G. V. Andrievsky², N. A. Vinnikov¹,
A. V. Dolbin¹, M. V. Kosevich¹, V. S. Shelkovsky¹, L. M. Buravtseva¹,
G. I. Dovbeshko^{3,4}, O. P. Gnatyuk³, O. Bezkravnyy⁴, M. Ptak⁴, M. Chaika⁴,
P. O. Kuzema⁵

¹ *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

² *Institute of Physiologically Active Compounds LLC, Kharkiv, Ukraine,*

³ *Institute of Physics of the National Academy of Sciences of Ukraine, Kiev, Ukraine*

⁴ *Institute of Low Temperatures and structural Research PAS, Wroclaw, Poland*

⁵ *Chuiko Institute of Surface Chemistry of NAS of Ukraine, Kyiv, Ukraine*

P53 Electron excitation energy transfer in mixed krypton-xenon clusters

Yu. S. Doronin, A. A. Tkachenko, V. L. Vakula, G. V. Kamarchuk,
O. G. Danylchenko and O. P. Konotop

B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

17:15-17:30 All participants of Stage 2 (short presentation one by one for 1,5 – 2 minutes)

17:30-17:45 Breakout Rooms Stage 2

P54 Mechanical stability and electronic properties of heterostructures based on β -InSe/MoSe₂

O. I. Korolov, K. E. Glukhov, L. Yu. Kharkhalis

Institute for Physics and Chemistry of Solid State, Uzhhorod National University, Uzhhorod, Ukraine

P55 Electronic and Sensing Properties of ZnO Nanoribbons: a DFT Analysis

M. Kovalenko, O. Bovgyra, D. Malanchuk

Ivan Franko National University of Lviv, Lviv, Ukraine

P56 Magnetotransport properties of carbon nanotubes decorated with magnetic alloys

I. Ovsienko¹, D. Shpylka¹, D. Zaiats¹, T. Len¹, L. Matzui¹, I. Mirzoiev², E. Beliayev²

¹ *Taras Shevchenko National University of Kyiv, Departments of Physic, Kyiv, Ukraine*

² *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

P57 Reversible luminescent hydrogen peroxide sensors based on CeO_{2-x} and CeO_{2-x}:Eu³⁺ nanocrystals

P. Maksimchuk¹, Ye. Neuhodov¹, K. Hubenko¹, A. Onishchenko², S. Yefimova¹,
V. Seminko¹

¹ *Institute for Scintillation Materials NAS of Ukraine, Kharkiv, Ukraine*

² *Kharkiv National University of Radio Electronics, Kharkiv, Ukraine*

P58 Modification of transmission gaps by an optical field in a molecular field-effect transistor

V.O. Leonov, E.G. Petrov, Ye.V. Shevchenko

Bogolyubov Institute for Theoretical Physics of NAS of Ukraine, Kyiv, Ukraine

BIOPHYSICS AND PHYSICS OF MACROMOLECULES

Chairs Maksym Barabashko and Diana Hurova

17:50-18:05 All participants of Stage 3 (short presentation one by one for 1,5 – 2 minutes)

18:05-18:20 Breakout Rooms Stage 3

P59 Binding characteristics of systemic glucocorticoids with the SARS-CoV-2 spike glycoprotein: in-silico evaluation

N. V. Khmil^{1,2}, V. G. Kolesnikov¹, A. O. Boiechko-Nemovcha²

¹ *O. Ya. Usikov Institute for Radiophysics and Electronics of NAS of Ukraine, Kharkiv, Ukraine*

² *Kharkiv National University of Radio Electronics, Kharkiv, Ukraine,*

P60 Intermolecular interactions of glutathione with molybdenum disulfide probed by laser desorption/ionization mass spectrometry

O. A. Boryak¹, V. A. Pashynska¹, M. V. Kosevich¹, P. O. Kuzema²,
V. A. Karachevtsev¹

¹ *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

² *Chuiko Institute of Surface Chemistry of the NAS of Ukraine, Kyiv, Ukraine*

- P61** **Analysis of cholinomimetic pharmacological properties of a new agonist of muscarinic cholinergic receptors**
T. O. Fedirko¹, O. V. Tsymbalyuk¹, I. S. Voiteshenko¹, S. A. Starosyla²,
V. G. Bdzhola³, A. O. Prykhod'ko³, A. Yu. Nyporko¹
¹ Taras Shevchenko National University of Kyiv, Kyiv, Ukraine
² Receptor AI Inc., 20-22 Wenlock Road, London N1 7GU, United Kingdom
³ Institute of Molecular Biology and Genetics of NAS of Ukraine, Kyiv, Ukraine
- P62** **The influence of the type of charged particles on the parameters of zigzag patterns in BSA films**
D. Glibitskiy¹, O. Gorobchenko², O. Nikolov², T. Dzhimieva², I. Zaitseva^{2,3},
A. Roshal⁴, M. Semenov¹, G. Glibitskiy¹
¹ O. Ya. Usikov Institute for Radiophysics and Electronics, NAS of Ukraine, Kharkiv, Ukraine;
² V. N. Karazin Kharkiv National University, Kharkiv, Ukraine;
³ O. M. Beketov National University of Urban Economy in Kharkiv, Kharkiv, Ukraine;
⁴ Institute for Chemistry, V. N. Karazin Kharkiv National University, Kharkiv, Ukraine
- P63** **Immobilization of glucose oxidase on graphene using 1-pyrenebutanoic acid succinimide ester: molecular dynamics study**
M. V. Karachevtsev, V. A. Karachevtsev
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
- P64** **Fluorescence responses of silica gel films with two coumarin dyes measured on a portable endogenous acetone analyzer in the microconcentration range**
Ya. P. Lazorenko, V. P. Mitsai
Institute of Magnetism NAS of Ukraine and MES of Ukraine, Kyiv, Ukraine
- P65** **Study of fluorescent responses of film polymer structures with dyes and quantum dots using a model of a portable analyzer of endogenous ammonia trace concentrations**
V. P. Mitsai, Ya. P. Lazorenko
Institute of Magnetism NAS of Ukraine and MES of Ukraine, Kyiv, Ukraine
- 18:25-18:40** All participants of **Stage 4** (short presentation one by one for 1,5 – 2 minutes)
- 18:40-19:00** **Breakout Rooms Stage 4**
- P66** **Binding of Pheophorbide-a and its Derivatives to Biopolymers of Different Composition and Secondary Structure: a Spectroscopic Study**
O. A. Ryazanova¹, I. M. Voloshin¹, L. V. Dubey², I. Ya. Dubey², and
V. A. Karachevtsev¹
¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
² Institute of Molecular Biology and Genetics of NAS of Ukraine, Kyiv, Ukraine
- P67** **Mass spectrometric probing of nanocomposite of methylene blue with molybdenum disulfide flakes**
V. S. Shelkovsky¹, O. A. Boryak¹, M. V. Kosevich¹, P. O. Kuzema²,
V. A. Karachevtsev¹
¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
² Chuiko Institute of Surface Chemistry of the NAS of Ukraine, Kyiv, Ukraine

- P68** **The comparative characterization of DNA:TiO₂ nanoparticle and DNA:MoS₂ nanoparticle nanoassemblies colloidal solutions investigated by dynamic light scattering method**
A. Yu. Svidzerska¹, V. A. Valeev¹, A. N. Lahuta^{2,3}, S. I. Petrushenko²,
A. Yu. Glamazda¹, V. A. Karachevtsev¹
¹ *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*
² *V.N. Karazin Kharkiv National University, Kharkiv, Ukraine*
³ *Aston University, Birmingham B4 7ET, U.K.*
- P69** **Effect of TiO₂ nanoparticles on the thermal stability of native DNA under conditions close to physiological ones**
E. L. Usenko, A. Yu. Glamazda, V. A. Valeev, V. A. Karachevtsev
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
- P70** **PEGylation of cytosine nucleic acid base: experiment and modeling**
V. G. Zobnina, M. V. Kosevich
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
- P71** **The effect of glycocalyx on the partitioning of antimicrobial peptides into plasma membrane of erythrocytes**
O. Yu. Borikov, D. A. Liadov, V. P. Berest
V.N. Karazin Kharkiv National University, 4 Svobody Sq., Kharkiv, 61022, Ukraine

THURSDAY, 6th of JUNE

PLENARY LECTURES OF INVITED SPEAKERS

Chair *Anna Herus*

- 10:00-10:30** **Leverage cloud technologies for enhanced research data accessibility and more effective scientific collaboration**
Philipp Jaeger
Pexon Consulting GmbH, Eschborn, Germany

TECHNOLOGIES AND INSTRUMENTATION FOR PHYSICAL EXPERIMENTS

Chair *Anna Herus*

- 10:30-10:45** **Control of the effective value of b_L parameter in an RF SQUID by the high-frequency electromagnetic field**
V. I. Shnyrkov^{1,2}, V. Yu. Lyakhno^{1,3}, O. G. Turutanov^{4,3}, O. O. Leha³
¹ *G.V. Kurdyumov Institute for Metal Physics, N.A.S. of Ukraine, Kyiv, Ukraine*
² *Kiev Academic University, Kiev, Ukraine*
³ *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*
⁴ *Department of Experimental Physics, Comenius University, Bratislava, Slovakia*

10:45-11:00 System spectral analysis of infrasonic waves in the atmosphere caused by a powerful explosion of a unique volcano

L. F. Chernogor¹, O. I. Liashchuk², M. B. Shevelev¹, N. M. Tilichenko¹

¹ V.N. Karazin Kharkiv National University, Kharkiv, Ukraine

² Main Center of Special Monitoring, urban village Gorodok, Zhitomir region, Ukraine

PLENARY LECTURES OF INVITED SPEAKERS

Chair Yevhen Petrenko

11:00-11:30 Exploring the Unified Theory of Thermal Transport: Experimental Insights, Predictive Precision, and Phenomenological Implications

D. Szewczyk¹, A. I. Krivchikov^{1,2}, A. Jeżowski¹

¹ Institute for Low Temperatures and Structure Research, Wrocław, Poland

² B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

11:30-12:00 Functional properties of Ni-Mn-based alloys: Theory and experiment

Anna Kosogor^{1,2}

¹ Institute of Magnetism NASU and MESU, Kyiv, Ukraine

² University of Vienna, Faculty of Physics, Vienna, Austria

12:00-12:30 Topological semimetals in heavy fermion compounds

Silke Paschen

Institute of Solid State Physics, Vienna University of Technology (TU Wien), Vienna, Austria

MATERIALS SCIENCE

Chair Yevhen Petrenko

12:30-12:45 First-principles study of point defects in C-doped yttrium aluminum garnet

K. V. Hermash¹, D. V. Fil^{1,2}

¹ Institute for Single Crystals of NAS of Ukraine, Kharkiv, Ukraine

² Karazin Kharkiv National University, Kharkiv, Ukraine

12:45-13:00 Ring and linear structures of CdTe clusters

I. V. Semkiv¹, M. Y. Rudysh^{2,3}, R. S. Yavorskyi⁴, N. Y. Kashuba¹,

P. A. Shchepanskyi², A. I. Kashuba¹

¹ Lviv Polytechnic National University, Lviv, Ukraine

² Ivan Franko National University of Lviv, Lviv, Ukraine

³ Jan Długosz University in Częstochowa, Częstochowa, Poland

⁴ Vasyl Stefanyk Precarpathian National University, Ivano-Frankivsk, Ukraine

13:00-14:00

BREAK

MATERIALS SCIENCE

Chair Yevhen Petrenko

14:00-14:15 Influence of Long-Term Exposure on Mechanical Properties of Polyimide Kapton H Films

V. A. Lototskaya, L. F. Yakovenko

B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, 61103, Ukraine

14:15-14:30 Radiation-Induced Effects in Polyimide Kapton H Films of Different Thicknesses. Influence on Mechanical Properties

V. A. Lototskaya, L. F. Yakovenko, G. I. Saltevskiy, I. P. Zaritskiy, Yu. S. Doronin, A. A. Tkachenko

B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, 61103, Ukraine

14:30-14:45 Hysteresis phenomena in Cd₂P₂S₆ layered crystals

H. Ban, D. Gal, S. Motrja, A. Molnar

Uzhhorod National University, Department of the Physics of Semiconductors, Uzhhorod, Ukraine

14:45-15:00 Multiple phase transitions in thin ethanol films obtained by physical deposition from the gas phase

A. Aldiyarov¹, D. Yerezhep^{1,2,3}, D. Yu. Sokolov^{1,4}, E. Korshikov¹, A. Nurmukan¹

¹ *Al-Farabi Kazakh National University, Almaty, Kazakhstan*

² *Satbayev University, Almaty, Kazakhstan*

³ *Institute of Physics and Technology, Satbayev University, Almaty, Kazakhstan*

⁴ *Almaty Technological University, Almaty, Kazakhstan*

15:00-15:15 Thermal conductivity of epoxy resin polymer composites with thermally reduced graphene oxide

V. V. Sagan¹, A. I. Krivchikov¹, A. Jeżowski²

¹ *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

² *Institute of Low Temperature and Structure Research, Wrocław, Poland*

15:15-15:30 Peculiarities of lattice dynamics of cadmium iodide and its appearance in photoelectric effects

M. Rudka¹, M. Orendáč², R. Tarasenko², M. Karkuliovská¹, N. Tovstyuk¹, B. Seredyuk³

¹ *Lviv Polytechnic National University, Lviv, Ukraine,*

² *Institute of Physics, Faculty of Science, P.J. Šafárik University, Košice, Slovakia*

³ *Hetman Petro Sahaidachnyi National Army Academy, Lviv, Ukraine,*

15:30-15:45 Conditions for the formation of new structural phases in BEDT-TTF

Y. M. Trotskiy¹, E. S. Syrkin¹, V. O. Lykah²

¹ *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

² *National Technical University "Kharkiv Polytechnic Institute", Kharkiv, Ukraine*

15:45-16:20

BREAK

16:20-19:05

POSTER SESSION (7 AND 9 SECTIONS)

TECHNOLOGIES AND INSTRUMENTATION FOR PHYSICAL EXPERIMENTS

Chairs *Oleksii Konotop and Diana Hurova*

16:20-16:30 **All participants of Stage 1 (short presentation one by one for 1,5 – 2 minutes)**

16:30-16:45 **Breakout Rooms Stage 1**

P72 **Microcomputers' applications at robotic medical systems prototypes**

V. V. Anufriiev, O. O. Kravchuk, E. P. Fedorenko

Kharkiv National University of Radio Electronics, Kharkiv, Ukraine

P73 **Development of low-temperature cell for IR Fourier-spectroscopy of hydrocarbon materials**

A. Kenbay¹, D. Yerezhep², A. Aldiyarov¹, E. Korshikov¹

¹*Al-Farabi KazNU, Almaty, Kazakhstan*

²*Satbayev University, Almaty, Kazakhstan*

P74 ***In vitro* pilot study of temperature field dynamics with cryoimpact**

G. Kovalov¹, M. Chyzh¹, V. Globa¹, G. Shustakova², Yu. Fomenko², E. Gordienko²,
D. Nikolenko³

¹*Institute for Problems of Cryobiology and Cryomedicine of NAS of Ukraine, Kharkiv, Ukraine*

²*B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

³*V. N. Karazin Kharkiv National University, Kharkiv, Ukraine*

P75 **The advanced device for the fine purification of synthetic organic conductors for the quantum point-contact sensors development**

M. Romanov¹, D. Harbuz¹, V. Gudimenko¹, O. Pospelov², D. Chudak³,
G. Kamarchuk¹

¹*B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

²*National Technical University "Kharkiv Polytechnic Institute", Kharkiv, Ukraine*

³*V. Karazin Kharkiv National University, Kharkiv, Ukraine*

MATERIALS SCIENCE

Chairs *Yevhen Petrenko and Diana Hurova*

16:50-17:05 **All participants of Stage 2 (short presentation one by one for 1,5 – 2 minutes)**

17:05-17:20 **Breakout Rooms Stage 2**

P76 ***In situ* video recording of crystallization of amorphous Sb₂Se₃ films**

A. G. Bagmut

National Technical University "Kharkiv Polytechnic Institute", Kharkiv, Ukraine

P77 **Optical properties of Tl₃TaSe₄ chalcogenide crystals**

O. V. Bokotey, O. O. Bokotey, P. P. Guranich, A. G. Slivka

Faculty of Physics, Uzhhorod National University, Uzhhorod, Ukraine

P78 **Study of Structural and Mechanical Properties of the Half Heusler Alloy C₂CaNa**

M. E. Ishaje¹, K. A. Minakova², V. A. Sirenko³, I. S. Bondar³

¹*Cross River University of Technology, Cross River State, Nigeria*

²*National Technical University Kharkiv Polytechnic Institute, Kharkiv, Ukraine*

³*B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

- P79 Relationship between microhardness and yield strength of nanostructured CoCrFeNiMn high-entropy alloy at $T = 77-290$ K**
L. S. Fomenko¹, H. V. Rusakova¹, S. N. Smirnov¹, E. D. Tabachnikova¹,
M. A. Tikhonovsky², Y. Huang³, T. Langdon⁴
¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
² National Science Center “Kharkiv Institute of Physics and Technology”, Kharkiv, Ukraine
³ Bournemouth University, Poole, Dorset, UK
⁴ University of Southampton, Southampton, UK
- P80 Annealing of PMA polyimide film. X-ray data**
V. Geidarov, I. Braude, Yu. Pohribna
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
- P81 The influence of internal strains induced by hydrogen on the electrical resistivity of the nanocrystalline vanadium film**
A. Grib, A. Kononenko, S. Petrushenko, S. Dukarov
V. N. Karazin National University, Kharkiv, Ukraine
- P82 Strength and plasticity of SPD magnesium alloy at low temperatures**
T. Hryhorova¹, P. Zabrodin^{1,2}, S. Shumilin¹
¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
² Czech Academy of Sciences, Institute of Theoretical and Applied Mechanics, Czech Republic
- 17:25-17:40 All participants of Stage 3 (short presentation one by one for 1,5 – 2 minutes)**
- 17:40-17:55 Breakout Rooms Stage 3**
- P83 Thermal conductivity analysis of composites with superlattice structure**
Yu. V. Horbatenko¹, O. O. Romantsova^{1,2}, A. I. Krivchikov¹, O. A. Koroluyk¹
¹ B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
² Institute for Low Temperatures and Structure Research, Wroclaw, Poland
- P84 Study of the process cryocapture of carbon dioxide molecules by solid water films**
E. Korshikov, A. Aldiyarov, A. Nurmukan, O. Vorobyova, D. Sokolov
Al Farabi Kazakh National University, Almaty, Kazakhstan
- P85 Influence of phase disequilibrium on changes in elastic properties of superplastic eutectic alloys caused by prior plastic deformation and aging**
V. F. Korshak¹, Y. O. Shapovalov², P. P. Pal-Val², L. N. Pal-Val²
¹ V. N. Karazin Kharkiv National University, Kharkiv, Ukraine
² B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
- P86 Electronic Structure of Sr-doped CsPbCl₃ Crystal: First Principles Investigation**
M. Kovalenko, O. Bovgyra, Ya. Chornodolskyy, O. Pidhornyi
Ivan Franko National University of Lviv, Lviv, Ukraine
- P87 Low-temperature micromechanical properties of epoxy resin/graphene oxide nanocomposites**
H. V. Rusakova, L. S. Fomenko, S. V. Lubenets, A. V. Dolbin, N. A. Vinnikov,
R. M. Basnukaeva, S. V. Cherednichenko
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
- P88 Features of thermal transport processes in van der Waals chalcogenides**
V. Liubachko, Yu. Vysochanskii
Institute for Solid State Physics and Chemistry, Uzhhorod National University, Uzhhorod, Ukraine

18:00-18:15 All participants of Stage 4 (short presentation one by one for 1,5 – 2 minutes)

18:15-18:30 Breakout Rooms Stage 4

- P89 The specificity of the interaction of palladium with hydrogen**
O. M. Liubymenko
Donetsk National Technical University "Donetsk National Technical University", Lutsk, Ukraine
- P90 X-ray determination of the influence of cryodeformation on the microstructure of ultrafine-grained/nanocrystalline titanium**
Yu. M. Pohribna, V. A. Moskalenko
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
- P91 The electric field induced light birefringence in $\text{HoAl}_3(\text{BO}_3)_4$**
V. A. Bedarev, D. M. Merenkov, S. M. Poperezhai
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
- P92 Dilatometric properties of Rb_2SO_4 crystals in the region of low temperatures**
I. A. Pryshko¹, V. Yo. Stadnyk¹, O. V. Shtuka¹, I. S. Novosad^{1,2}
¹*Physics Faculty, Ivan Franko National University of Lviv, Lviv, Ukraine*
²*Department of General Physics, Lviv Politechnic National University, Lviv, Ukraine*
- P93 Temperature-induced phase transformation in $(\text{As}_{1-x}\text{Bi}_x)_2\text{S}_3$ glasses**
S. Hasynets¹, V. Kryshenik¹, A. V. Gomonnai^{1,2}, V. Lopushansky¹, V. Loya¹, I. Chychura¹, V. Rubish³
¹*Institute of Electron Physics of NAS of Ukraine, Uzhhorod, Ukraine*
²*Uzhhorod National University, Uzhhorod, Ukraine*
³*Uzhhorod Laboratory of Institute for Information Recording of NAS of Ukraine, Uzhhorod, Ukraine*
- P94 The reverse indentation size effect in heavily deformed materials**
S. V. Lubenets, L. S. Fomenko, H. V. Rusakova
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

18:35-18:50 All participants of Stage 5 (short presentation one by one for 1,5 – 2 minutes)

18:50-19:05 Breakout Rooms Stage 5

- P95 Nonlinearity effect of highly elastic deformation of an amorphous polymer**
V. D. Natsik, H. V. Rusakova
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
- P96 A study of composition and annealing temperature influence on the mechanical properties of Fe-Cr-Al alloys**
V. O. Kharchenko^{1,2}, D. O. Kharchenko^{1,2}, O. M. Shchokotova¹, B. O. Lysenko¹, A. V. Dvornichenko²
¹*Institute of Applied Physics, National Academy of Sciences of Ukraine, Sumy, Ukraine*
²*Sumy State University, Sumy, Ukraine*
- P97 On the degradation of structural polymers exposed to high-energy atomic oxygen ions**
V. A. Shuvalov, N. B. Gorev, G. S. Kochubei, Yu. P. Kuchugurnyi, N. I. Pismennyi, N. A. Tokmak
Institute of Technical Mechanics, Dnipro, Ukraine
- P98 Deformation behavior of hcp solid solutions Ti-Nb under tension in the temperature range 1.7 - 423 K**
V. A. Moskalenko, R. V. Smolianets
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

- P99** **Dislocation mechanisms of low temperature acoustic relaxation and plastic deformation of a high-entropy alloy $\text{Al}_{0.5}\text{CoCrCuFeNi}$**
Yu. O. Semerenko, V. D. Natsik, E. D. Tabachnikova
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine
- P100** **The influence of the Gorsky effect on the hydrogen diffusion and the formation of microcracks in vanadium films**
A. Grib, A. Yaroshenko
V. N. Karazin National University, Kharkiv, Ukraine
- P101** **Mechanical properties of high-entropy CoCrFeNiC_x alloys at 77 K and 300 K**
A. V. Levenets, V. S. Okovit, M. A. Tikhonovsky, O. M. Velikodnyi
National Science Center "Kharkiv Institute of Physics and Technology" of NAS of Ukraine, Kharkiv, Ukraine

FRIDAY, 7th of JUNE

PLENARY LECTURES OF INVITED SPEAKERS

Chair *Denys Laptev*

- 10:00-10:30** **Fractional types of statistics: state of the art and some historical flashbacks**
A. Rovenchak
Professor Ivan Vakarchuk Department for Theoretical Physics, Ivan Franko National University of Lviv, Lviv, Ukraine

THEORY OF CONDENSED MATTER PHYSICS

Chair *Denys Laptev*

- 10:30-10:45** **Spectral characteristics and energy gaps of 2D and 3D quantum many-body systems in thermodynamic limit**
I. V. Lukin^{1,2}, D. I. Bondar³, A. G. Sotnikov^{1,2}
¹*Karazin Kharkiv National University, Kharkiv, Ukraine*
²*Akhiezer Institute for Theoretical Physics, NSC KIPT, Kharkiv, Ukraine*
³*Department of Physics and Engineering Physics, Tulane University, New Orleans, LA, USA*
- 10:45-11:00** **Quantum control and enhancement of superconducting pairing in one-dimensional Fermi-Hubbard chains**
O. V. Povitchan¹, D. I. Bondar², A. G. Sotnikov^{1,3}
¹*V.N. Karazin Kharkiv National University, Kharkiv, Ukraine*
²*Department of Physics and Engineering Physics, Tulane University, New Orleans, LA, USA*
³*Akhiezer Institute for Theoretical Physics, NSC KIPT, Kharkiv, Ukraine*

- 11:00-11:15 Identification of Open Quantum Systems: A Novel Approach Based on Polynomial Optimization**
Z. Popovych, D. Bondar
Department of Physics and Engineering Physics, Tulane University, New Orleans, LA, USA
- 11:15-11:30 Effects of symmetry breaking in four component interacting Fermi gas in periodic potential**
V. I. Unukovych¹, A. G. Sotnikov²
¹*V.N. Karazin Kharkiv National University, Kharkiv, Ukraine*
²*Akhiezer Institute for Theoretical Physics, NSC KIPT, Kharkiv, Ukraine*
- 11:30-11:45 Magnetic states in the XY Heisenberg model on the honeycomb lattice**
I. V. Lukin^{1,2}, M. O. Luhanko¹, A. G. Sotnikov^{1,2}
¹*Karazin Kharkiv National University, Kharkiv, Ukraine*
²*Akhiezer Institute for Theoretical Physics, NSC KIPT, Ukraine*
- 11:45-12:00 Residual symmetry and classification of degenerate states of equilibrium SU(4) magnets with spin $s=3/2$**
M. Yu. Kovalevsky, A. A. Rozhkov
National Scientific Center "Kharkov Physics and Technology Institute" Kharkiv, Ukraine

12:05-12:30 POSTER SESSION (8 SECTION)

THEORY OF CONDENSED MATTER PHYSICS

Chairs Denys Laptev and Diana Hurova

12:05-12:15 All participants of Stage 1 (short presentation one by one for 1,5 – 2 minutes)

12:15-12:30 Breakout Rooms Stage 1

- P102 Many-body hamiltonian on the basis of spherical tensor operators for studying collective phenomena in quantum high-spin systems**
M. Bulakhov¹, A. S. Peletminskii^{1,2}, and Yu. V. Slyusarenko^{1,2}
¹*Akhiezer Institute for Theoretical Physics, National Science Center "Kharkiv Institute of Physics and Technology", NAS of Ukraine, Kharkiv, Ukraine*
²*V.N. Karazin Kharkiv National University, Kharkiv, Ukraine*
- P103 Calculation of optical modes for chalcogenide compounds $\text{Sn}_2\text{P}_2\text{X}_6$ (X=S, Se)**
V. Yu. Klevets, N. D. Savchenko, A. G. Slivka, A. I. Susla, V. Yu. Bihanych
Uzhhorod National University, Uzhhorod, Ukraine
- P104 Nonequilibrium protection effect and spatial localization of noise-induced fluctuations under gas flow scattering on partially penetrable obstacle**
S. P. Lukyanets, O. V. Kliushnichenko
Institute of Physics of NAS of Ukraine, Kyiv, Ukraine
- P105 Electron-impact excitation and ionization of K atom**
V. Roman
Institute of Electron Physics, National Academy of Sciences of Ukraine, Uzhhorod, Ukraine

12:30-13:30 BREAK

PLENARY LECTURES OF INVITED SPEAKERS

Chair *Denys Laptev*

13:30-14:00 Engineering electronic flat bands in two dimensions

Yu. Skrypnyk

Bogolyubov Institute for Theoretical Physics of NAS of Ukraine, Kyiv, Ukraine

14:00-14:30 Controlled rotations of a hot hole spin qubits

T. Patlatiuk¹, M. J. Carballido¹, S. Svab¹, S. Bosco², P. Chevalier Kwon¹, R. Eggli¹, E. Bakkers³, J. C. Egues¹, D. Loss^{1,4}, D. Zumbühl¹

¹ *University of Basel, Switzerland*

² *QuTech and Kavli Institute of Nanoscience, Delft University of Technology, Netherlands*

³ *Eindhoven University of Technology, Netherlands* ⁴ *Instituto de Física de São Carlos, Universidade de São Paulo, São Carlos, Brazil*

THEORY OF CONDENSED MATTER PHYSICS

Chair *Denys Laptev*

14:30-14:45 Dynamics of acoustic superradiance model in the ferromagnetism method

S. F. Lyagushyn, A. I. Sokolovsky

Oles Honchar Dnipro National University, Dnipro, Ukraine

14:45-15:00 Application of Langevin dynamics for machine learning and optimization tasks

O. Borysenko

National Science Center "Kharkiv Institute of Physics and Technology", Kharkiv, Ukraine

15:00-15:15:00 Asymmetry-induced ratchet effect in polariton graphene

O. M. Bahrova^{1,2}, S. V. Koniakhin²

¹ *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

² *Center for Theoretical Physics of Complex Systems, Institute for Basic Science, Daejeon Republic of Korea*

15:15-15:30 Investigation of the opto-electronic properties of RbGeI₃ cubic perovskite solar material

T. Abera

Wachemo University, Hossana, Ethiopia

15:30-15:45 Reset dynamics of a photon detector based on a flux-biased phase qubit

O. A. Ilinskaya^{1,2}, A. I. Ryzhov^{1,3}, S. N. Shevchenko¹

¹ *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

² *G. V. Kurdyumov Institute for Metal Physics, Kyiv Ukraine*

³ *Theoretical Quantum Physics Laboratory, Cluster for Pioneering Research, RIKEN, Wakoshi, Saitama, Japan*

15:45-16:00 Quantum Signal Processing with adiabatic impulse model

D. O. Shendryk^{1,2,3}, O. V. Ivakhnenko^{2,4} and S. N. Shevchenko²

¹ *Ruhr University Bochum, Germany*

² *B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine*

³ *V. N. Karazin Kharkiv National University, Kharkiv, Ukraine*

⁴ *Theoretical Quantum Physics Laboratory, Cluster for Pioneering Research, RIKEN, Wakoshi, Saitama 351-0198, Japan*

PLENARY LECTURES OF INVITED SPEAKERS

Chair *Denys Laptev*

16:00-16:30 **Transport signatures of plasmon fluctuations in electron hydrodynamics**

Dmitry Zverevich and Alex Levchenko

Department of Physics, University of Wisconsin-Madison, Madison, USA

16:30-17:00

Closing Remarks

Deputy Director of the B. Verkin ILTPE of NAS of Ukraine

Prof. Oleksandr Dolbin

and

Chair of Organizing Committee Diana Hurova