



**III International Advanced Study Conference
Condensed Matter and Low Temperature Physics**

CM<P 2023

5 - 11 June 2023 | Kharkiv, Ukraine

Conference Program

Kharkiv 2023

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Dr. Oleksiy Konotop

Dr. Yevhen Petrenko

Dr. Sergii Poperezhai

Dr. Yuliya Savina

PLENARY LECTURES OF INVITED SPEAKERS

MONDAY, 5 JUNE

9:50 – 10:00

Opening Remarks - Yu.G. Naidyuk and N. Mysko-Krutik

10:00 – 10:40

Theory, simulations, and experiments of laser scanning with rotational Risley prisms

V.-F. Duma^{1,2}, A.-L. Dimb²

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

²Doctoral School, Polytechnic University of Timisoara, Timisoara, Romania

10:40 – 11:20

Low-temperature magnetic phase transition in TbAl₃(BO₃)₄ - quantum and classical aspects

T. Zajarniuk¹, A. Szewczyk¹, P. Wisniewski², M. U. Gutowska¹, R. Puzniak¹, H. Szymczak¹, I. Gudim³, V. A. Bedarev⁴, and P. Tomczak⁵

¹Institute of Physics, Polish Academy of Sciences, Warsaw, Poland

²Institute of Low Temperature and Structure Research, Polish Acad. of Sciences, Wroclaw, Poland

³Kirensky Institute of Physics, Federal Research Center KSC SB RAS, Krasnoyarsk, Russia

⁴B. Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkiv, Ukraine

⁵Faculty of Physics, Adam Mickiewicz University, Poznan, Poland

11:40 – 12:20

Crystal structure, phase transitions and magnetic behaviour of the BiFeO₃-based perovskite solid solutions

A.N. Salak¹, D.D. Khalyavin², E.L. Fertman³, A.V. Fedorchenko³, R. Tarasenko⁴, A. Feher⁴, E. Čížmár⁴

¹Department of Materials and Ceramic Engineering, CICECO – Aveiro Institute of Materials, University of Aveiro, Aveiro, Portugal

²ISIS Facility, Rutherford Appleton Laboratory, Chilton, Didcot, Oxfordshire, UK

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

⁴Institute of Physics, Faculty of Science, P.J. Šafárik University in Košice, Košice, Slovakia

12:20 – 13:00

Spin-orbital liquid state and liquid-gas metamagnetic transition on a pyrochlore lattice

S. Zherlitsyn

Hochfeld-Magnetlabor Dresden, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany

TUESDAY, 6 JUNE

10:00 – 10:40

Unconventional exchange-bias effect in single crystals of RFeO₃ (R =Er, Nd, Sm) and GdCrO₃ compensated ferrimagnets

I. Fita, R. Puzniak, A. Wisniewski

Institute of Physics, Polish Academy of Sciences, Warsaw, Poland

10:40 - 11:20

Vortex jets in superconducting films

O.V. Dobrovolskiy

University of Vienna, Faculty of Physics, Nanomagnetism and Magnonics, Superconductivity and Spintronics Laboratory, Vienna, Austria

12:40 – 13:00

Vortex dynamics in FeSeTe thin films at microwaves: flux flow, anisotropy, pinning and impact of heavy-ion irradiation

N. Pompeo^{1,2}, A. Alimenti¹, V. Braccini³, G. Ghigo^{4,5}, M. Iebole⁶, M. Meinero⁶, E. Silva^{1,2}, K. Torokhtii¹, D. Torsello^{4,5}, P. Vidal García^{1,2}

¹Dept. of I.E.M. Engineering, University Roma Tre, Roma, Italy

²INFN Sezione Roma Tre, Roma, Italy

³CNR-SPIN, Genova, Italy

⁴Dept. of Applied Science and Technology, Politecnico di Torino, Torino, Italy

⁵INFN Sezione di Torino, Torino, Italy

⁶Dept. of Physics, University of Genova, Genova, Italy

14:00 – 14:20

The emergence of the non-interacting channel in the strongly interacting 1D system

V. Kagalovsky

Shamoon College of Engineering, Beer-Sheva, Israel

14:20 – 15:00

Unconventional Josephson Effects in Hybrid Superconductor-Semiconductor Junctions

S M. Frolov

Department of Physics and Astronomy, University of Pittsburgh, USA

16:00 – 16:40

Transport on an interacting helical edge with resonant impurities

D. Pesin

University of Virginia, Charlottesville, Charlottesville, United States

WEDNESDAY, 7 JUNE

10:00 – 10:20

Obtaining Nanostructure-containing Ceramic Material for Practical Application and Increasing Technology Readiness Level

Z. Aslamazashvili, G. Zakharov, N. Aslamazashvili, D. Kvashvadze, G. Mikaberidze, M. Chikhradze
F.Tavadze Metallurgy and Materials Science Institute

10:20 – 10:40

Wide bandgap Cu(In,Ga)S₂ thin film solar cell: a promising partner for C-Si based tandem devices

N. Barreau

Institut des Matériaux de Nantes Jean Rouxel, Université de Nantes, CNRS, Nantes, France

11:30 – 12:10

Topology- and geometry-driven properties of superconductor 3D nanoarchitectures

V. M. Fomin^{1,2}

¹Institute for Emerging Electronic Technologies, Leibniz Institute for Solid State and Materials Research (IFW) Dresden, Dresden, Germany

²Faculty of Physics and Engineering, Moldova State University, Chişinău, Republic of Moldova

14:00 – 14:20

Intrinsic and pinning anisotropy from surface impedance measurements in superconducting YBCO and Fe(Se,Te) thin films

E. Silva¹, A. Alimenti¹, A. Augieri², V. Braccini³, G. Celentano³, V. Pinto³, N. Pompeo¹, M. Putti⁴, F. Rizzo², K. Torokhtii¹, P. Vidal García¹

¹Dipartimento di Ingegneria Industriale, Elettronica e Meccanica, Università Roma Tre, Roma 00146, Italy

²ENEA, Frascati Research Centre, Frascati, Italy

³CNR-SPIN, Genova, Italy

⁴Dipartimento di Fisica, Università di Genova, Genova, Italy

15:40 – 16:00

Layered double hydroxides as fillers in nanocomposites

C. S. Neves, S. Silva, J. Tedim

Department of Ceramics and Materials Engineering, CICECO Aveiro Institute of Materials, University of Aveiro, Aveiro, Portugal

16:00 – 16:20

Luminescence properties and ROS scavenging activity of ceria nanoparticles

V. Seminko

Institute for Scintillation Materials NAS of Ukraine, Kharkiv, Ukraine

16:20 – 16:40

A comparative study on the effect of substrates on electrical properties of tin and chromium thin films

S.Udachan¹, N.H. Ayachit¹, S.B. Kolvekar¹, L.A. Udachan.², S.Siddanna³, S.S. Kolkundi⁴

¹School of Advanced Sciences, KLE Technological University, Hubballi India

²S. S. Tegnoor Degree College, Kalaburagi, India

³Morarji PU Science College, Gundagurti, Kalaburagi, India

⁴Government First Grade College, Shahapur, Yadgir, India

THURSDAY, 8 JUNE

10:00 – 10:40

Flat Band Induced Metal-Insulator Transitions With Weak Disorder and Many Body Interactions

S. Flach

Institute for Basic Science, Center for Theoretical Physics of Complex Systems, Daejeon, South Korea

10:40 – 11:00

Charge Kondo impurity simulator operating in the fractional quantum Hall regime

A.V. Parafilo

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

16:30 – 16:50

Encapsulation of Octahedral Molybdenum Clusters and SnSe Nanowires in Single-Walled Carbon Nanotubes

E. Faulques¹, N. Kalashnyk², V.G. Ivanov³, A. Sanchez⁴, C. Slade⁴, J. Sloan⁴

¹University of Nantes, CNRS, Institut des Matériaux Jean Rouxel, IMN, Nantes, France

²Univ. Lille, CNRS, Centrale Lille, Univ. Polytechnique Hauts-de-France, UMR -IEMN –Institut d'Electronique, de Microélectronique et de Nanotechnologie, Lille, France

³Sofia University, Faculty of Physics, 5 James Bourchier Boulevard, Sofia, Bulgaria

⁴Department of Physics, University of Warwick, Gibbet Hill Road, Coventry, United Kingdom

16:50 – 17:30

Superlattices: nanomaterials for photonics and optical spectroscopy

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

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

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

FRIDAY, 9 JUNE

10:00 – 10:20

Peculiarities of RNA Adsorption on Graphene/Graphene oxide

V.A. Karachevtsev

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

14:00 – 14:40

Diffusion Oscillations in AC-Driven Space-Periodic Systems

I.G. Marchenko^{1,2,3}, V.Yu. Aksenova^{1,2}, I.I. Marchenko⁴, J. Spiechowicz³, J. Luczka³

¹NSC “Kharkov Institute of Physics and Technology” Kharkiv, Ukraine

²Kharkov National University, Kharkiv, Ukraine

³Institute of Physics, University of Silesia, Chorzów, Poland

⁴NTU “Kharkiv Polytechnic Institute”, Kharkiv, Ukraine

14:40 – 15:00

New emission band of solid Nitrogen

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

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

15:00 – 15:20

Vortex light, a novel tool to discriminate helicity from chirality in chiral media

P. Lemmens¹, S. Müllner¹, R. Ferizaj¹, F. Predelli¹, F. Büscher¹, A. Möller²

¹Institute for Condensed Matter Physics, University of Technology Braunschweig,

²Department of Chemistry, JGU Mainz, D-55128 Mainz, Germany

16:40-17:00

Closing Remarks – Organizing Committee

SECTION 1. ELECTRONIC PROPERTIES OF CONDUCTING AND SUPERCONDUCTING SYSTEMS

Section Chair: Dr. Valentin Kovrya

ORAL PRESENTATIONS

TUESDAY, 6 JUNE

11:40 – 12:40

Effects of annealing on the fluctuation conductivity and pseudogap in slightly doped HoBa₂Cu₃O_{7-δ} single crystals

A.L. Solovjov^{1,2,3}, A.S. Kolisnyk¹, L.V. Bludova¹, E.V. Petrenko¹, Yu.A. Kolesnichenko¹, R.V. Vovk³

¹B. Verkin Institute for Low Temperatures Physics and Engineering, NAS of Ukraine, Kharkiv, Ukraine

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

On the possibility of Cooper pairing and superconductivity in the surface bands of noble metals

V.I. Pentegov, A.V. Semenov

Institute of Physics, NAS of Ukraine, Kyiv, Ukraine

Evolution of the pseudogap and excess conductivity of YBa₂Cu₃O_{7-δ} single crystals in the course of long-term aging

A.L. Solovjov^{1,2,3}, L.V. Bludova¹, M.V. Shytov¹, S.N. Kamchatnaya², Z.F. Nazyrov², R.V. Vovk²

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Effect of Dy substitution by Eu on superconductivity in (Dy_{1-x}Er_x)Rh_{3.8}Ru_{0.2}B₄ (x=0, 0.2, 0.4)

V.M. Yarovy¹, A.V. Terekhov^{1,2}, P. Fesenko³, I.V. Zolocheskii¹, E.V. Khrystenko¹

¹B. Verkin Institute for Low Temperatures Physics and Engineering, NAS of Ukraine, Kharkiv, Ukraine

²Institute for Low Temperatures and Structure Research, Polish Academy of Sciences, Wroclaw, Poland

³National Technical University «Kharkiv Polytechnic Institute», Kharkiv, Ukraine

Features of magnetoresistance behavior in Bi_{0.95,69}Mn_{3,69}Fe_{0,62}

V.M. Yarovy¹, A.V. Terekhov^{1,2}, A.L. Solovjov^{1,2}, V.B. Stepanov¹

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TUESDAY, 6 JUNE, 16:40 – 17:00
WEDNESDAY, 7 JUNE, 16:40 – 17:00

Acoustoelectric transformation in superconducting chalcogenides based on FeSe

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

¹B. Verkin Institute for Low Temperatures Physics and Engineering, NAS of Ukraine, Kharkiv, Ukraine

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

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

Pseudogap and fluctuation conductivity studies: YBCO polycrystal co-added with BaTiO₃ and WO₃ nanoparticles

L.V. Bludova¹, E.V. Petrenko¹, A.L. Solovjov¹, E. Hannachi², Y. Slimani³, M.A. Almessiere³

¹B. Verkin Institute for Low Temperatures Physics and Engineering, NAS of Ukraine, Kharkiv, Ukraine

²Department of Nuclear Medicine Research, Institute for Research and Medical Consultations (IRMC), Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia

³Department of Biophysics, Institute for Research and Medical Consultations (IRMC), Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia

Effect of the sign of charge carriers in the kinetic and magnetic anomalies of Al_{0.5}CoCuCrNiFe high-entropy alloy

N.A. Azarenkov, V.A. Frolov, E.V. Karaseva, E.S. Savchuk, V.I. Sokolenko,

M. A. Tikhonovsky

NSC Kharkiv Institute of Physics and Technology, NAS of Ukraine, Kharkiv, Ukraine

Quantum capacitance and inductance of qubit-based systems

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

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

Formation of a Josephson junction between isolated superconductors by electrical breakdown of the insulator

S.I. Bondarenko, A.V. Krevsun, V.P. Koverya, A.G. Sivakov, R.S. Galushkov

B. Verkin Institute for Low Temperatures Physics and Engineering, NAS of Ukraine, Kharkiv, Ukraine

Fingerprints of Leggett-like collective excitations in two-component superconductors

A. Shapovalov^{1,2}, V. Tarenkov^{2,3}, A. Kalenyuk^{1,2}, V. Krivoruchko³, D. Menesenko¹, E. Zhitlukhina³,

M. Belogolovskii¹, P. Seidel⁴

¹Kyiv Academic University, Kyiv, Ukraine

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

³O.O. Galkin Donetsk Institute for Physics and Engineering, NAS of Ukraine, Kyiv, Ukraine

⁴Institut für Festkörperphysik, Friedrich-Schiller-Universität Jena, Jena, 07743, Germany

Evolution of the pseudogap temperature dependence under the influence of strong magnetic fields in YBCO films

E.V. Petrenko¹, L.V. Bludova¹, A.L. Solovjov¹, K. Rogacki²

¹B. Verkin Institute for Low Temperatures Physics and Engineering, NAS of Ukraine, Kharkiv, Ukraine

²Institute for Low Temperatures and Structure Research, Polish Academy of Sciences, Wroclaw, Poland

SECTION 2. MAGNETISM AND MAGNETIC MATERIALS

Section Chair: Dr. Yuliya Savina

ORAL PRESENTATIONS

MONDAY, 5 JUNE

13:00 – 13:20

The magnetic properties of Cu(en)(H₂O)₂SO₄ the S = 1/2 quantum antiferromagnet loaded into mesoporous silica matrix SBA-15 with the hexagonal arrangement of poresP. Danylchenko¹, R. Tarasenko¹, E. Čižmár¹, V. Tkáč¹, V. Zelenák², A. Orendáčová¹ and M. Orendáč¹¹Institute of Physics, Faculty of Science, P.J. Šafárik University, Košice, Slovak Republic²Institute of Chemistry, Faculty of Science, P.J. Šafárik University, Košice, Slovak Republic**Magnetic interactions in Ca₃Nd₂(BO₃)₄ single crystal**S.N. Poperezhai¹, D.N. Merenkov¹, T. Zajarniuk², V.A. Bedarev¹, A.N. Shekhovtsov³, M.B. Kosmyna³, W. Paszkowicz², A. Szewczyk²¹B. Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkiv, Ukraine²Institute of Physics, Polish Academy of Sciences, Warsaw, Poland³Institute for Single Crystals of NAS of Ukraine, Kharkiv, Ukraine

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TUESDAY, 6 JUNE, 16:40 – 17:00

WEDNESDAY, 7 JUNE, 16:40 – 17:00

Features of the magnetoelastic interaction in the antiferromagnetic MnF₂I.V. Bilych¹, K.R. Zhekov¹, G.A. Zvyagina¹, V.D. Fil¹, T.N. Haidamak², D.V. Fil^{3,4}¹B. Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkiv, Ukraine²Charles University Ovocný trh 5, Prague, Czech Republic³Institute for Single Crystals, NAS of Ukraine, Kharkiv, 61072, Ukraine⁴V.N. Karazin Kharkiv National University, Kharkiv, Ukraine**Magnetic properties of HoCr₃(BO₃)₄**Yu. Savina¹, A. Bludov¹, V. Pashchenko¹, V. Khrustalyov¹, V.M. Savytskyi¹, A. Lynnyk², T. Zajarniuk², M.U. Gutowska², A. Szewczyk², I. Kolodiy³¹B. Verkin Institute for Low Temperature Physics and Engineering of the NAS of Ukraine, Kharkiv, Ukraine²Institute of Physics, Polish Academy of Sciences, Warsaw, Poland³National Science Center «Kharkov Institute of Physics and Technology», Kharkiv, Ukraine**The reciprocating thermal behavior in spin relaxation of [Gd₂(H₂O)₆(C₂O₄)₃] · 2.5H₂O complex**A. Doroshenko¹, R. Tarasenko¹, V. Tkáč¹, V. Kavečanský², E. Čižmár¹, A. Orendáčová¹, R. Smolko³, J. Černák³, M. Orendáč¹¹Institute of Physics, Faculty of Science, P.J. Šafárik University in Košice, Košice, Slovakia²Slovak Academy of Sciences, Institute of Experimental Physics, Košice, Slovakia³Institute of Chemistry, Faculty of Science, P.J. Šafárik University, Košice, Slovakia**Cobalt-Containing Layered Double Hydroxides: Low-Temperature Heat Capacity**A.V. Fedorchenko¹, E.L. Fertman¹, A.A. Lyogenkaya¹, D.E.L. Vieira², Yu.G. Pashkevich³, R.Yu. Babkin³, R. Tarasenko⁴, V. Tkáč⁴, M. Holub⁴, E. Čižmár⁴, A. Feher⁴, A.N. Salak²¹B. Verkin Institute for Low Temperature Physics and Engineering of NASU, Kharkiv, Ukraine²Department of Materials and Ceramic Engineering, CICECO – Aveiro Institute of Materials, University of Aveiro, Aveiro, Portugal³O. Galkin Donetsk Institute for Physics and Engineering of NASU, Kyiv, Ukraine⁴Institute of Physics, Faculty of Science, P.J. Šafárik University in Košice, Košice, Slovakia

Rh³⁺ doped 122-type iron pnictide CaFe₂As₂: Raman scattering study

A.Yu. Glamazda¹, V.P. Gnezdilov^{1,2}, P. Lemmens^{2,3}

¹B. Verkin Institute for Low Temperature Physics and Engineering of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine

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

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

The rare-earth binary ferrobaborate Nd_{0.75}Dy_{0.25}Fe₃(BO₃)₄ single crystal: spectroscopic and ultrasonic study

A.Yu. Glamazda^{1,2}, V.P. Gnezdilov^{1,3}, P. Lemmens^{3,4}, G.A. Zvyagina¹

¹B. Verkin Institute for Low Temperature Physics and Engineering of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine

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³Institute for Condensed Matter Physics, TU-Braunschweig, Braunschweig, Germany

⁴Laboratory for Emerging Nanometrology and International Graduate School of Metrology, TU-Braunschweig, Braunschweig, Germany

The Influence of Percolation Spin Current on Magnetoresistance Hysteresis Loops

E.Yu. Beliayev¹, I.G. Mirzoiev¹, V.V. Andrievskii¹, A.V. Terekhov¹, V.A. Horielyi¹, I.A. Chichibaba²

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²National Technical University «Kharkiv Polytechnic Institute», Kharkiv, Ukraine

The energy spectrum and low-temperature magnetic properties of the decorated two-leg mixed spin ladder

V.O. Cheranovskii, E.V. Ezerskaya, A.A. Kabatova

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

Magnetic hysteresis properties of light birefringence in the LiCoPO₄ orthophosphate crystal

Yu. Kharchenko¹, O. Miloslavskaya and M. Kharchenko

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

High-field magnetic properties in double molybdate KEr(MoO₄)₂

V. Khrustalyov¹, K. Kutko¹, B. Bernáth², L. Prodan³, Y. Skourski⁴, and D. Kamenskyi^{2,3}

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²High Field Magnet Laboratory (HFML - EMFL) Radboud University, Nijmegen, The Netherlands

³Experimental Physics V, Center for Electronic Correlations and Magnetism, Institute of Physics, University of Augsburg, Augsburg, Germany

⁴Dresden High Magnetic Field Laboratory (HLD-EMFL), Helmholtz-zentrum Dresden-Rossendorf, Dresden, Germany

Experimental study of hydrostatic and chemical pressure effects on magnetic properties of RCoO₃ cobaltites (R = La, Pr, Nd, Sm, Eu)

I.P. Zhuravleva¹, A.S. Panfilov¹, G.E. Grechnev¹, A.A. Lyogenkaya¹, V.A. Pashchenko¹, L.O. Vasylechko², V.M. Hreb²

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²Lviv Polytechnic National University, Lviv, Ukraine

Specific heat of the zeolitic imidazolate frameworks

L. Kotvytska¹, R. Tarasenko¹, R. Feyerherm², S. Gabáni³, O. Lyutakov⁴, M. Erzina⁴, M. Orendáč¹, A. Orendáčová¹

¹Institute of Physics, P. J. Šafárik University, Košice, Slovakia

²Institut für Quantenphänomene in neuen Materialien Helmholtz-Zentrum Berlin, Berlin, Germany

³Institute of Experimental Physics of SAS, Košice, Slovakia

⁴University Chem & Technol., Dept. Solid State Engn, Prague, Czech Republic

Zeeman effect in $\text{KEr}(\text{MoO}_4)_2$ at magnetic field up to 30 TK.V. Kutko¹, N.M. Nesterenko¹, B. Bernáth², D.L. Kamenskyi^{2,3}¹B.Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkiv, Ukraine²High Field Magnet Laboratory (HFML – EMFL), Radboud University, Nijmegen, The Netherlands³Experimental Physics V, Center for Electronic Correlations and Magnetism, Institute of Physics, University of Augsburg, Augsburg, Germany**Electronic structure and magnetic properties of antiferromagnet FeGe_2** A.S. Panfilov, A.A. Lyogenkaya, G.E. Grechnev, V.A. Desenko and A.V. Fedorchenko

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

New verification of the magnetic point symmetry group of the calcium–manganese germanium garnet $\text{Ca}_3\text{Mn}_2\text{Ge}_3\text{O}_{12}$ O.V. Bibik², O.V. Myloslavska¹, M.F. Kharchenko¹¹B.Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkiv, Ukraine²Georgia Institute of Technology | GT · School of Aerospace Engineering, Atlanta, Georgia, USA**Computational and spectroscopic comparative analysis of phonon spectra of LiNiPO_4** A.V. Peschanskii¹, A.Yu. Glamazda^{1,2}¹B.Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkiv, Ukraine²V.N. Karazin Kharkiv National University, Kharkiv, Ukraine**Peculiarities of magnetic linear dichroism spectra in $\text{HoFe}_3(\text{BO}_3)_4$ crystal**V.G. Piryatinskaya, I.S. Kachur¹B.Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkiv, Ukraine**Magnetic properties of $\text{HoFe}_{2.5}\text{Ga}_{0.5}(\text{BO}_3)_4$ single crystal**Yu. Savina¹, O. Bludov¹, V. Khrustalyov¹, V.M. Savytskyi¹, V. Pashchenko¹, A. Lynnyk², T. Zajarniuk², M.U. Gutowska², A. Szewczyk²¹B. Verkin Institute for Low Temperature Physics and Engineering of the NAS of Ukraine, Kharkiv, Ukraine²Institute of Physics, Polish Academy of Sciences, Warsaw, Poland**Nonlinear harmonics in the doubly clamped magnetic bridge**A.M. Sokolov^{1,2}, T.T. Heikkilä²¹Institute of Physics, Kyiv, Ukraine²University of Jyväskylä, Jyväskylä, Finland**SECTION 3. OPTICS, PHOTONICS AND OPTICAL SPECTROSCOPY***Section Chair: Dr. Sergii Poperezhai***ORAL PRESENTATIONS****MONDAY, 5 JUNE****14:40 – 15:30****Raman spectroscopy of amorphous As–Te–S films**Y.M. Azhniuk¹, V.V. Lopushansky¹, V.Y. Loya¹, A.V. Gomonnai^{1,2}¹Institute of Electron Physics, Uzhhorod, Ukraine²Uzhhorod National University, Uzhhorod, Ukraine**Designing Hyperbolic Metasurfaces Based on Gold Nanodisks**A. Hrinchenko, O. Yermakov

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

Brewster's angle shift with two-dimensional materials and structuresO. Mankovska¹, O. Yermakov²¹Bilytska High School #1, Bilyky, Poltava region, Ukraine²V. N. Karazin Kharkiv National University, Kharkiv, Ukraine

Spectroscopic study of J-aggregates interaction with nanostructured TiO₂ matricesP.V. Pisklova¹, I.Yu. Ropakova¹, I.I. Bespalova¹, S. Krivonogov², S.L. Yefimova¹, A.V. Sorokin¹¹Institute for Scintillation Materials of NAS of Ukraine, Kharkiv, Ukraine²Institute for Single Crystals of NAS of Ukraine, Kharkiv, Ukraine**Merging fiber optics with nanostructures for enhanced light coupling**O. Yermakov¹, M. Zeisberger², H. Schneidewind², J. Kim², A. Bogdanov³, Y. Kivshar⁴, M.A. Schmidt²¹V. N. Karazin Kharkiv National University, Kharkiv, Ukraine²Leibniz Institute of Photonic Technology, Jena, Germany³Harbin Engineering University, Harbin, China⁴Australian National University, Canberra, Australia**POSTERS**

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TUESDAY, 6 JUNE, 16:40 – 17:00**WEDNESDAY, 7 JUNE, 16:40 – 17:00****Luminescent Monitoring the State of Dichroic Complexes in Polaroids Based on Polyvinyl Alcohol**A.V. Tyurin, S.A. Zhukov, A.Yu. Akhmerov

Odesa National University named after I. I. Mechnikov, Odesa, Ukraine

Few-photon wave packet propagation via a nonlinear cavity dimer in a one-dimensional waveguideV.L. Andriichuk¹, E.V. Stolyarov²¹Institute of Physics of the National Academy of Sciences of Ukraine, Kyiv, Ukraine²Bogolyubov Institute for Theoretical Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine**Diode-pumped Nd:YAG laser setup as source of radiation for the range finder**

S.S. Herasymov

Department of Physical Foundations of Electronic Engineering, Kharkiv National University of Radio Electronics, Kharkiv, Ukraine

Uniaxial Model of the Solar Collector Taking into Account Heat Loss and Thermal Resistance of the Absorber PlateK.O. Minakova, R.V. Zaitsev, M.V. Kirichenko

National Technical University “Kharkiv Polytechnic Institute”, Kharkiv, Ukraine

Dynamical characteristics of an impurity in a molecular aggregate in the bichromatic electromagnetic fieldI.Yu. Ropakova¹, A.A. Zvyagin²¹Institute for Scintillation Materials of NAS of Ukraine, Kharkiv, Ukraine²B. Verkin Institute for Low Temperature Physics and Engineering NASU, Kharkiv, Ukraine**Continuous counting of photon pairs with a threshold detector**A.M. Sokolov^{1,2}¹Institute of Physics, Kyiv, Ukraine²University of Jyväskylä, Jyväskylä, Finland**Two-photon coupling between a Josephson photomultiplier and a microwave resonator**E.V. Stolyarov¹, A.M. Sokolov^{2,3}¹Bogolyubov Institute for Theoretical Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine²University of Jyväskylä, Jyväskylä, Finland³Institute of Physics, Kyiv, Ukraine

Photoluminescent properties of C₆₀ fullerite intercalated with N₂ and H₂ molecules in a wide temperature range

V.N. Zoryansky, P.V. Zinoviev

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

SECTION 4. QUANTUM LIQUIDS AND QUANTUM CRYSTALS, CRYOCRYSTALS

Section Chair: Dr. Oleksii Konotop

ORAL PRESENTATIONS

FRIDAY, 9 JUNE

15:40 – 16:40

Comparative study of exciton self-trapping in rare gas clusters and cryocrystals

Yu.S. Doronin, G.V. Kamarchuk, A.A. Tkachenko, M.A. Bludov, I.V. Khyzhniy, S.A. Uyutnov, E.V. Savchenko

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

Resonances of Closed Vibrating Fork in Superfluid ³He-⁴He Mixtures

N.O. Herashchenko, Ye.K. Nemchenko, K.E. Nemchenko, S.V. Rogova, T.G. Viktinskaya

Education and Research Institute for Computational Physics and Energetics, V.N. Karazin Kharkiv National University, Kharkiv, Ukraine

Formation mechanisms of substrate-free clusters in N₂-Kr binary supersonic jets

O.P. Konotop, O.G. Danylenko

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

Thermomagnetic convective effect in normal and superfluid liquids

O.M. Konstantynov

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

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TUESDAY, 6 JUNE, 16:40 – 17:00

WEDNESDAY, 7 JUNE, 16:20 – 17:00

Determination of orientational order parameter in the low-temperature phase of solid Nitrogen-15

D.E. Hurova¹, A. I. Erenburg², N.A. Aksenova³, N.N. Galtsov¹

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

²Ben-Gurion University of Negev, Beer-Sheva, Israel

³Ukrainian State University of Railway Transport, Kharkiv, Ukraine

Phase diagrams of heterocyclic hydrocarbons

A.V. Karachevtseva, V.A. Konstantinov, V.V. Sagan

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

Defect-induced singularities in the spectrum of a one – dimensional atomic structure adsorbed by a carbon nanotube bundle. Heat capacity

S.B. Feodosyev, E.V. Manzhelii, E.S. Syrkin

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

Universal Temperature Dependence of the Diffusons Contribution to the Thermal Conductivity of Complex Clathrate-type Crystals

O.O. Romantsova^{1,2}, Yu. Horbatenko¹, O. Korolyuk¹, O. Krivchikov^{1,2}, D. Szweczyk², A. Jeżowski²

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

²W. Trzebiatowski Institute for Low Temperatures and Structure Research, Polish Academy of Sciences, Wrocław, Poland

P-V-T phase diagrams of carbocyclic compoundsV.V. Sagan, V.A. Konstantinov, A.V. Karachevtseva

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

Interactions of Non-modified, Organo and Acid-Modified Laponite with Liquid Crystal Hosts in Lyotropic and Thermotropic PhasesN.A. Kasian, S.S. Minenko, O.M. Samoilov, L.N. Lisetski

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

SECTION 5. NANOPHYSICS AND NANOTECHNOLOGIES*Section Chair: Dr. Maksym Barabashko***ORAL PRESENTATIONS****WEDNESDAY, 7 JUNE****14:20 – 15:20****Single photon sources $g^2(0)$ reduction by means of Photon Number Resolving detectors**C. Bruscino¹, M. Ejrnaes³, P. Ercolano¹, D. Salvoni², C. Zhang², H. Li⁴, L. You⁴, L. Parlato^{1,3}, G. P. Pepe^{1,3}¹Dip. di Fisica “E. Pancini”, Università degli Studi di Napoli Federico II, Napoli, Italy²Photon Technology (Zhejiang) Co., Ltd. Jiashan, Zhejiang, PRC³CNR-SPIN Institute of Superconductors, Innovative Materials and Devices, Pozzuoli, Italy⁴Shanghai Institute of Microsystem and Information Technology (SIMIT), Chinese Academy of Sciences (CAS), Shanghai, PRC**Investigation of the photo-response of few-layer ReSe₂ field effect transistors at different pressures**K. Intonti^{1,2}, E. Faella^{1,2}, L. Viscardi¹, A. Kumar¹, O. Durante^{1,2}, F. Giubileo², M. Passacantando³,H.T. Lam⁴, A. Konstantinos⁴, M. Craciun⁴, S. Russo⁴, D. Bartolomeo^{1,2}¹Department of Physics “E.R. Caianiello”, University of Salerno, Fisciano, Salerno, Italy²CNR-SPIN, Fisciano, Salerno, Italy³Department of Physical and Chemical Science, University of L’Aquila, Coppito, L’Aquila, Italy⁴University of Exeter, Devon, UK**Electrochemical Synthesis of Thin Graphene Layers for Field Emission Applications**V. S. Lebed^{1,2}, E. G. Len^{1,2}, O. M. Lisova³, M. A. Skoryk²¹Kyiv Academic University, NAS and MES of Ukraine, Kyiv, Ukraine²G. V. Kurdyumov Institute for Metal Physics, N.A.S. of Ukraine, Kyiv, Ukraine³Chuiko Institute of Surface Chemistry, NAS of Ukraine, Kyiv, Ukraine**Rate-equation approach for the solid-state artificial atom**M.P. Liul, S.N. Shevchenko

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

Explicit consideration of heat flow in nanoribbons with diffusive boundary scatteringJ. Amrit¹, T. Medintseva², Ye. Nemchenko², K. Nemchenko², S. Rogova², T. Vikhtinskaya²¹LIMSI-CNRS, Université Paris-Saclay, 91405, Orsay, France²V.N.Karazin Kharkiv National University, 61022, Kharkiv, Ukraine**Ni and NiCr contacts in Black Phosphorus based field-effect transistors**L. Viscardi^{1,2}, K. Intonti^{1,2}, A. Kumar¹, E. Faella^{1,2}, A. Pelella³, F. Giubileo², S. Sleziona⁴, O. Kharsah⁴, M. Schleberger⁴, and A. Di Bartolomeo^{1,2}¹Department of Physics “E.R. Caianiello”, University of Salerno, Fisciano, Italy²CNR-SPIN, Fisciano, Italy³Department of Science and Technology, University of Sannio, Benevento, Italy⁴Fakultät für Physik and CENIDE, Universität Duisburg-Essen, Duisburg, Germany

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TUESDAY, 6 JUNE, 16:40 – 17:00
WEDNESDAY, 7 JUNE, 16:40 – 17:00

1D chains of Xe atoms: heat capacity and thermal expansion

M.S. Barabashko, M.I. Bagatskii, V.V. Sumarokov, A.V. Dolbin

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

Heat capacity of modified MWCNTs with a diameter Ø9.4 nm

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

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

²Institute for Low Temperatures and Structure Research, Polish Academy of Sciences, Wroclaw, Poland

³Low Temperature Laboratory, Condensed Matter Physics Dptm., Univ. Autónoma de Madrid, Spain

Research on Entropy Generation in Complex Flow Structures in the Artificial Network of the Circulatory System

L.V. Batyuk¹, N.N. Kizilova²

¹Kharkiv National Medical University, Kharkiv, Ukraine

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

Optical properties of aqueous colloidal solution of fullerenes C₆₀

S.V. Cherednichenko, N.A. Vinnikov, A.V. Dolbin, R.M. Basnukaeva

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

Selective quantum detection methods for the analysis of liquid and gaseous media

A.O. Herus^{1,3}, A.V. Savytskyi¹, A.P. Pospelov², Yu.S. Doronin¹, V.L. Vakula¹, G.V. Kamarchuk^{1,3}, E. Faulques³

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

²National Technical University “Kharkiv Politechnic Institute” Kharkiv, Ukraine

³Institut des Matériaux de Nantes Jean Rouxel, Nantes Université, Nantes, France

Optical properties of metal nanocylinders with periodically modulated surface

A. Korotun^{1,2}

¹National University "Zaporizhzhia Politechnic", Zaporizhzhya, Ukraine

²G.V. Kurdyumov Institute for Metal Physics of the NAS of Ukraine, Kyiv, Ukraine

Conditions for the Formation of Electroluminescence in Molecular Junctions

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

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

Effect of Europium Doping on «Dark» Reactive Oxygen Species Generation Ability of Orthovanadate Nanoparticles

P. Maksimchuk¹, K. Hubenko¹, V. Seminko¹, A. Onishchenko², Y. Neuhodov¹, V. Klochkov¹, S. Yefimova¹

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

²Kharkiv National University of Radio Electronics, Kharkiv, Ukraine

Numerical description of phonon heat flow in nanoribbons with diffusive and specular boundary reflection

J. Amrit¹, T. Medintseva², K. Nemchenko², T. Vikhtinskaya²

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

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

Characteristics of Phonon Propagation in Graphene Nanostructures. Fast High-Frequency Phonons in a Quasi-Bending Mode

S. Feodosyev, I. Gospodarev, V. Sirenko¹, E. Syrkin¹, I. Bondar¹, K. Minakova²

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

²National Technical University “Kharkiv Polytechnic Institute”, Kharkiv, Ukraine

Surface plasmons in metal-dielectric nanodisks. Model of an equivalent oblate spheroid

N.I. Pavlyshche¹, A.V. Korotun^{1,2}, V.P. Kurbatsky¹

¹National University "Zaporizhzhia Politechnic", Zaporizhzhya, Ukraine

²G.V. Kurdyumov Institute for Metal Physics of the NAS of Ukraine, Kyiv, Ukraine

Amplification of the field for the analysis of hybrid spherical nanoparticles

N.A. Smirnova¹, A.V. Korotun^{1,2}, I.M. Titov³

¹National University "Zaporizhzhia Politechnic", Zaporizhzhya, Ukraine

²G.V. Kurdyumov Institute for Metal Physics of the NAS of Ukraine, Kyiv, Ukraine

³UAD Systems, Zaporizhzhia, Ukraine

SECTION 6. BIOPHYSICS AND PHYSICS OF MACROMOLECULES

Section Chair: Dr. Nataliia Mysko-Krutik

ORAL PRESENTATIONS

FRIDAY, 9 JUNE

10:20 – 11:00 and 11:30 – 12:30

Tracing population dynamics of erythrocytes by chromatographic microfluidics

V.P. Berest, D.A. Lyadov

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

Immobilization of flexible linker with pyrene anchor for siRNA on Single Walled Carbon Nanotube's surface: Molecular Dynamics study

M.V. Karachevtsev

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

Physicochemical and mesomorphic properties of thermotropic liquid crystals for transdermal delivery

M.V. Nesterkina¹, O.V. Vashchenko², P.V. Vashchenko³, L.N. Lisetski², I.A. Kravchenko^{1,4}

¹Helmholtz Institute for Pharmaceutical Research Saarland, Saarbrücken, Germany

²Institute for Scintillation Materials, Kharkiv, Ukraine

³SSI “Institute for Single Crystals”, Kharkiv, Ukraine

⁴Ukrainian Research Institute of Transport Medicine of the Ministry of Health of Ukraine, Odessa, Ukraine

Spectroscopy and AFM study of few-layer MoS₂ exfoliated with nucleotides

N.V. Kurnosov¹, I.M. Voloshin¹, O.S. Lytvyn², A.M. Plokhotnichenko¹, V.A. Karachevtsev¹

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

²Borys Grinchenko Kyiv University, Kyiv, Ukraine

Numerical modelling of working parameters of a multiwell microplate as all-dielectric metasurface based sensitive platform for microwave sensors

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

¹O.Ya. Usikov Institute for Radiophysics and Electronics, NASU, Kharkiv, Ukraine

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

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

Noncovalent intermolecular interaction of drugs with delivery assisting agents as a basis for the drug delivery molecular platforms development

V.A. Pashynska¹, S.G. Stepanian¹, M.V. Kosevich¹, A. Gomory², L. Dragos²

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

² Institute of Organic Chemistry of the Research Center for Natural Sciences, Hungarian Academy of Sciences, Budapest, Hungary

DFT study of vibrational spectra and structure of the pyrimidine base-molybdenum disulfide complexes

T. Pidubnyi¹, S. Stepanian¹, L. Adamowicz²

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

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

The detail dynamic light scattering investigation of DNA : TiO₂ nanoassemblies colloidal solution at pH 5.0 depending on temperature

A.Yu. Svidzerska¹, V.A.Valeev¹, A.N Lahuta^{2,3}, S. Petrushenko^{1,2}, A.Yu. Glamazda¹, V.A.Karachevtsev¹

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

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

³Aston University, Department of Mathematics, B47ET, Birmingham, UK

Mutual impact of alternative mechanisms of gramicidin S embedding into model lipid membranes

R.Ye. Brodskii^{1,2}, O. V. Vashchenko³

¹Institute for Single Crystals, National Academy of Science of Ukraine, Kharkiv, Ukraine

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

³Institute for Scintillation Materials, National Academy of Science of Ukraine, Kharkiv, Ukraine

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TUESDAY, 6 JUNE, 16:40 – 17:00
WEDNESDAY, 7 JUNE, 16:40 – 17:00

Monitoring of freezing of a polydispersed system by desorption mass spectrometry

O.A. Boryak, V.G. Zobnina, V.V. Orlov, M.V. Kosevich

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

DNA:SWNTs nanohybrids in gelatin films: spectroscopic studies

A.Yu. Glamazda^{1,2}, A.M. Plokhotnichenko¹, V.A. Karachevtsev¹

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

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

Comparison of the Effects of Biologically Active Substances on the Textures of Zigzag Patterns on Films Obtained from BSA Solutions

D.M. Glibitskiy¹, O.A. Gorobchenko², O.T. Nikolov², T.A. Cheipesh², T.N. Dzhimieva², I.S. Zaitseva^{2,3}, A.D. Roshal⁴, M.A. Semenov¹, G.M. Glibitskiy¹

¹O. Ya. Usikov Institute for Radiophysics and Electronics, NASU, Kharkiv, Ukraine

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

³O. M. Beketov National University of Urban Economy in Kharkiv, Kharkiv, Ukraine

⁴Institute for Chemistry, V. N. Karazin Kharkiv National University, Kharkiv, Ukraine

Model study of the protein-ligand binding in the development of hypersensitivity to folic acid

N.V. Khmil, V.G. Kolesnikov

O.Ya. Usikov Institute for Radiophysics and Electronics, NASU, Kharkiv, Ukraine

Anti-adhesive properties of antimicrobial peptides

I.A. Perepelitsa, V.P. Berest

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

Electrospinning of PMMA/PVA Nanofibers with Incorporated Antibacterial ComponentsA.M. Plokhotnichenko, V.A. Karachevtsev

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

Binding of TMPyP₃₊ Porphyrin to poly(A)-poly(U) Polynucleotide: a Spectroscopic StudyO.A. Ryazanova¹, I.M. Voloshin¹, A.Yu. Glamazda¹, L.V. Dubey², I.Ya. Dubey², V.A. Karachevtsev²¹B. Verkin Institute for Low Temperature Physics and Engineering NASU, Kharkiv, Ukraine²Institute of Molecular Biology and Genetics of NAS of Ukraine, Kyiv, Ukraine**Mass spectrometric observation of selectivity of interaction of amino acids with graphene oxide**V.S. Shelkovsky, O.A. Boryak, V.V. Orlov, M.V. Kosevich

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

DNA-TiO₂ nanoparticle nanoassemblies: differential UV spectroscopy and thermal denaturation studyE.L. Usenko¹, A.Yu. Glamazda^{1,2}, V.A. Valeev¹, S.I. Petrushenko², O.A. Ryazanova¹, V.A. Karachevtsev¹¹B. Verkin Institute for Low Temperature Physics and Engineering NASU, Kharkiv, Ukraine²V. N. Karazin Kharkiv National University, Kharkiv, Ukraine**The effect of thiamine on the condensation of serum albumin from the viscometry viewpoint**T.O. Hushcha, M.S. Mykula, A.I. Vovk

V.P. Kukhar Institute of Bioorganic Chemistry and Petrochemistry of NAS of Ukraine, Kyiv, Ukraine

Molecular docking study of the complexes between fibrillized insulin and albuminU. Tarabara, V. Trusova, O. Zhytniakivska, K. Vus, G. Gorbenko

Department of Medical Physics and Biomedical Nanotechnologies, V.N. Karazin Kharkiv Nat. University, Kharkiv, Ukraine

SECTION 7. MATERIALS SCIENCE*Section Chair: Dr. Yevhen Petrenko***ORAL PRESENTATIONS****WEDNESDAY, 7 JUNE****10:40 – 11:00 and 12:10 – 12:40****Experimental study of the low-temperature properties of As_xS_{100-x} glass**P. Baloh¹, V. Tkáč¹, M. Orendáč¹, A. Orendáčová¹, V. Mitsa², R. Holomb^{2,3} and A. Feher¹¹Institute of Physics, Faculty of Science, PavolJozefŠafárik University in Košice, Košice, Slovakia²Dptm.of Informative & Operating Systems and Technologies, Uzhhorod Nat. Univ., Uzhhorod, Ukraine³Wigner Research Centre for Physics, Budapest, Hungary**In-situ insights into metal-support interaction in ceria-supported metal catalysts**O.S. Bezkrvnyi¹, M. Vorokhta², P. Kraszkiwicz¹, L. Kepinski¹¹Institute for Low Temperatures and Structure Research, Polish Academy of Sciences, Wroclaw, Poland²Charles University, Prague, Czech Republic**In plane contraction on SrTiO₃ (001) surface by the RHEED method**V.O. Hamaliij, N.V. Krainyukova

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

Involving of cationic sublattices into multiple polarization states in ferroelectric CuInP₂S₆Yu. Vysochanskii, V. Liubachko, R. Yevych

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

Low temperature plasticity of microcrystalline Mg-1.7Al-0.66Ce-0.36La-0.23Nd-0.18Mn-0.05Pr alloyP. Zabrodin, S. Shumilin, T. Hryhorova

B. Verkin Institute for Low Temperatures Physics and Engineering, NAS of Ukraine, Kharkiv, Ukraine

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WEDNESDAY, 7 JUNE, 16:40 – 17:00

Photoinduced crystallization of SnS₂ phase in Sn-doped As₂S₃ glass observed by Raman spectroscopy

Y.M. Azhniuk¹, S.M. Hasynets¹, V.V. Lopushansky¹, V.M. Kryshenik¹, A.V. Gomonnai^{1,2}

¹Institute of Electron Physics, Nat. Acad. Sci. Ukr., Uzhhorod, Ukraine

²Uzhhorod National University, Uzhhorod, Ukraine

Temperature dependence of plasticity characteristics determined by indentation of CoCrFeNiMn high-entropy alloy

L.S. Fomenko¹, H.V. Rusakova¹, S.N. Smirnov¹, E.D. Tabachnikova¹, Yu.O. Shapovalov¹,

M.A. Tikhonovsky², A.V. Levenets², Y. Huang^{3,4}, Terence G. Langdon⁴

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

²National Science Center “Kharkiv Institute of Physics and Technology” of NASU, Kharkiv, Ukraine

³Department of Design and Engineering, Faculty of Science and Technology, Bournemouth University, UK

⁴Materials Research Group, Department of Mechanical Engineering, University of Southampton, UK

Effect of annealing on the structure of PMA polyimide film

V. Geidarov, I. Braude, Yu. Pohribnaya

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

Thermal behavior of graphene-epoxy nanocomposites

A.B. Nadtochiy¹, B.M. Gorelov², A.M. Gorb¹, O.I. Polovina¹, O.O. Korotchenkov¹

¹Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

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

Using a Reference IR Source with a Combined Emissivity for Measuring the Temperature of Cryo-Objects by Thermography

E.Yu. Gordiyenko, Yu.V. Fomenko, G.V. Shustakova

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

Microstructure and Mechanical Properties of the high-entropy Fe₅₀Mn₃₀Co₁₀Cr₁₀ Alloy at cryogenic temperatures down to 0.5 K

T.V. Hryhorova¹, S.E. Shumilin¹, Yu.O. Shapovalov¹, I.V. Kolodiy², Yu.O. Semerenko¹, S.N. Smirnov¹,

A.V. Levenets², E.D. Tabachnikova¹, M.A. Tikhonovsky², M.J. Zehetbauer³, I.V. Kashuba¹, E. Schafner³

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

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³Faculty of Physics, University of Vienna, Vienna, Austria

Growth and crystal structure of CdTe_{1-x}Se_x (x > 0.75) thin films prepared by the method of high-frequency magnetron sputtering

A.I. Kashuba¹, B. Andriyevsky²

¹Department of General Physics, Lviv Polytechnic National University, Lviv, Ukraine

²Faculty of Electronics and Computer Sciences, Koszalin University of Technology, Koszalin, Poland

First-principle calculation of electronic energy structure and thermoelectric properties of β-Ag₈GeSe₆

I.V. Semkiv, N.Yu. Kashuba

Department of General Physics, Lviv Polytechnic National University, Lviv, Ukraine

Low-Temperature Anomalies of the Dielectric Permeability of Sn₂P₂S₆ Crystals

H. Ban, D. Gal, A. Haysak, A. Molnar

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

Features of structure formation in composites based on synthesized nanopowder of ZrO₂E.S. Gevorkyan¹, O.M. Morozova¹, V.P. Nerubatskyi¹, V.O.Chyshkala²¹Ukrainian State University of Railway Transport, Kharkiv, Ukraine²V.N. Karazin Kharkiv National University, Kharkiv, Ukraine**Excitation of electron states of GaAs(100):Sn by slow electrons**

T. Y. Popyk

Institute of Electron Physics, Nat. Acad. Sci. Ukr., Uzhhorod, Ukraine

Mechanism of the modifying effect of molybdenum on the grain structure of copper pseudo-alloysV. Riaboshtan¹, A. Zubkov¹, M. Zhadko², N. Pinchuk¹¹National Technical University «Kharkiv Polytechnic Institute», Kharkiv, Ukraine²Department of Physics and NTIS - European Centre of Excellence, University of West Bohemia, Plzeň, Czech Republic**Correlation between Microhardness and Yield Strength of Extruded Oxygen-free Copper in the Temperature Range of 77-300 K**S.V. Lubenets, L.S. Fomenko, H.V. Rusakova

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

Features of highly elastic (rubber-like) deformation of amorphous polyimide (kapton H) under moderate and deep coolingH.V. Rusakova, S.V. Lubenets, V.A. Lototskaya

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

Molecular segments and elastons are structural and kinetic units of low-temperature highly elastic (rubber-like) deformation of amorphous polymersV.D. Natsik, H.V. Rusakova

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

Theoretical interpretation and analytical approximation of low-temperature deformation diagrams of amorphous polyimideV.D. Natsik, H.V. Rusakova

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

Phase equilibria in the Ag₇SiS₅I–Ag₇GeS₅I systemI.O. Shender, A.I. Pogodin, M.J. Filep, T.O. Malakhovska, O.P. Kokhan, L.M. Suslikov

Uzhhorod National University, Pidhirna St. 46, 88000, Uzhhorod, Ukraine

Low-temperature plasticity of ultrafine-grained copperS. Shumilin, T. Hryhorova, P. Zabrodin

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

Probe diagnostics of a rarefied magnetized plasma flow in modeling the physicochemical interaction of polymers with atomic oxygen in the Earth's ionosphereV.A. Shuvalov¹, N.I. Pis'mennyi¹, D.N. Lazuchenkov¹¹Institute of Technical Mechanics of NAS of Ukraine and SSA of Ukraine, Dnipro, Ukraine**Dislocation mechanisms of low-temperature plasticity in nanocrystalline titanium**V.A. Moskalenko, R.V. Smolianets, V.D. Natsik, Yu.M. Pohribna

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

Thermostructural plasticity of nanocrystalline hafniumR.V. Smolianets¹, V.A. Moskalenko¹, S.P. Stetsenko², K.V. Kovtun²¹B. Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkiv, Ukraine²National Scientific Centre “Kharkov Physic-Technical Institute” NAS Ukraine, Kharkov, Kharkov, Ukraine

The effect of O₂ pressure on phase formation and superconductivity properties of Tl-2223 HTS

D.L. Surmanidze^{1,2}, T. E. Lobzhanidze¹, I.R. Metskhvarishvili^{1,3}, G.N. Dgebuadze¹, B.G. Bendeliani¹, M.R. Metskhvarishvili⁴, V.M. Gabunia^{1,5}

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

²Ivane Javakhishvili Tbilisi State University, Faculty of Exact and Natural Sciences, Department of Chemistry, Tbilisi, Georgia

³Georgian Technical University, Faculty of Informatics and Control Systems, Department of Microprocessor and Measurement Systems, Tbilisi, Georgia

⁴Talga Institute of Georgian Technical University, Tbilisi, Georgia

⁵Petre Melikishvili Institute of Physical and Organic Chemistry of Iv. Javakhishvili Tbilisi State University, Tbilisi, Georgia

Flux flow and pinning at microwaves in MgB₂ with added Te or cubic-BN

K. Torokhtii¹, A. Alimenti¹, P. Badica², A. Crisan², M. Grigoroșcuta², N. Pompeo¹, E. Silva¹, P. Vidal García¹,

¹Department of Industrial, Electronic and Mechanical Engineering, Roma Tre University, Roma, Italy

²National Institute of Materials Physics, Magurele, Romania

Structural and phase transitions in BEDT-TTF

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

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²National Engineering University “Kharkiv Polytechnic Institute”, Kharkiv, Ukraine

SECTION 8. THEORY OF CONDENSED MATTER PHYSICS

Section Chair: Dr. Denys Laptiev

ORAL PRESENTATIONS

THURSDAY, 8 JUNE

11:30 – 13:00, 14:00 – 15:15, and 15:45 – 16:30

Many-body phases in optical-lattice systems with alkaline-earth(-like) atoms. Dynamical Mean Field approach

E. Bilokon^{1,2}, V. Bilokon^{1,2}, A. Cichy^{1,3}, A. Sotnikov^{2,4}

¹Institute of Spintronics and Quantum Information, Mickiewicz University in Poznań, Poznań, Poland

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³Institut für Physik, Johannes Gutenberg-Universität Mainz, Mainz, Germany

⁴Akhiezer Institute for Theoretical Physics, NSC KIPT, Kharkiv, Ukraine

Many-body correlations in one-dimensional optical lattices with alkaline-earth(-like) atoms

V. Bilokon^{1,2}, E. Bilokon^{1,2}, M.C. Bañuls³, A. Cichy^{1,4}, A. Sotnikov^{2,5}

¹Institute of Spintronics and Quantum Information, Adam Mickiewicz University in Poznań, Poznań, Poland

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

³Max-Planck-Institut für Quantenoptik, Garching, Germany

⁴Institut für Physik, Johannes Gutenberg-Universität Mainz, Mainz, Germany

⁵Akhiezer Institute for Theoretical Physics, NSC KIPT, Kharkiv, Ukraine

Evolution of magnetic ordering of SU(4)-symmetric fermionic mixture within the transition from 3D to 2D-layered optical lattice

V.I. Unukovych¹, A.G. Sotnikov^{1,2}

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

²Akhiezer Institute for Theoretical Physics, NSC KIPT, Kharkiv, Ukraine

Many-body localization in a quantum gas with long-range interactions and linear external potential

I.V. Lukin^{1,2}, Yu.V. Slyusarenko^{1,2}, A.G. Sotnikov^{1,2}

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

²Akhiezer Institute for Theoretical Physics, NSC KIPT, Kharkiv, Ukraine

Superradiation and condensed matter: reduced description methodS.F. Lyagushyn, A.I. Sokolovsky

Oles Honchar Dnipro State University, Dnipro, Ukraine

Magnetic properties of the frustrated decorated Ising chainD.V. Laptiev, O.O. Krivchikov, V.V. Slavin

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

Investigation of Magnetic Properties in 2D Ising Systems on Decorated Honeycomb LatticeO.O. Krivchikov, D.V. Laptiev

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

On one phase transition with features of a topological effectS.P. Lukyanets, O.V. Kliushnichenko

Institute of Physics of NAS of Ukraine, Kyiv, Ukraine

Cooling and pumping of nanomechanical vibrations promoted by Andreev tunnelingO.M. Bahrova^{1,2}, S.I. Kulinich², L.Y. Gorelik³, H.C. Park¹, R.I. Shekhter⁴¹Center for Theoretical Physics of Complex Systems, Inst. for Basic Science, Daejeon, Republic of Korea²B.Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkiv, Ukraine³Department of Physics, Chalmers University of Technology, Göteborg, Sweden⁴Department of Physics, University of Gothenburg, Göteborg, Sweden**Theoretical investigation of a semiclassical dissipative flux qubit-based photon detector**O.A. Ilinskaya^{1,2}, S.N. Shevchenko^{1,3}, O.G. Turutanov^{1,4}, V.Yu. Lyakhno^{1,2}¹B.Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkiv, Ukraine²G.V. Kurdyumov Institute for Metal Physics, Kyiv 03142, Ukraine³V.N. Karazin Kharkiv National University, Kharkiv, Ukraine⁴Comenius University, Bratislava, Slovakia**Alternative qubit driving: Phase case**P.O. Kofman^{1,2,3,4}, S.N. Shevchenko^{1,2}, F. Nori^{3,5,6}¹B.Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkiv, Ukraine²V. N. Karazin Kharkiv National University, Kharkiv, Ukraine³Theoretical Quantum Physics Laboratory, CPR, RIKEN, Wakoshi, Saitama, Japan⁴University of Lisbon and Telecommunications Institute, Lisbon, Portugal⁵Quantum Computing Center, RIKEN, Wakoshi, Saitama, Japan⁶Department of Physics, The University of Michigan, Ann Arbor, USA**Optimization of fast nonadiabatic single-qubit logic gates**O.V. Ivakhnenko^{1,2}, A.I. Ryzhov^{1,2}, S.N. Shevchenko^{1,3}, Franco Nori^{2,4,5}¹B.Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkiv, Ukraine²Theor. Quantum Physics Laboratory, Cluster for Pioneering Research, RIKEN, Wakoshi, Saitama, Japan³V. N. Karazin Kharkiv National University, Kharkiv, Ukraine⁴Physics Department, University of Michigan, Ann Arbor, USA⁵Quantum Computing Center, RIKEN, Wakoshi, Saitama, Japan**Two-qubit nonadiabatic quantum logic gates**A.I. Ryzhov^{1,2}, O.V. Ivakhnenko^{1,2}, S.N. Shevchenko¹, Franco Nori^{2,3,4}¹B.Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkiv, Ukraine²Theor. Quantum Physics Laboratory, Cluster for Pioneering Research, RIKEN, Wakoshi, Saitama, Japan³Quantum Computing Center, RIKEN, Wakoshi, Saitama, Japan⁴Physics Department, University of Michigan, Ann Arbor, USA

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TUESDAY, 6 JUNE, 16:40 – 17:00
WEDNESDAY, 7 JUNE, 16:40 – 17:00

Broken-axisymmetry state and magnetic state diagram of spin-1 condensate through the prism of quadrupole degrees of freedom

M. Bulakhov^{1,2}, A.S. Peletminskii^{1,2}, and Yu.V. Slyusarenko^{1,2}

¹Akhiezer Institute for Theoretical Physics, National Science Center "Kharkov Institute of Physics and Technology", NAS of Ukraine, Kharkiv, Ukraine

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

Fine structure of bound states of parametrically-driven dissipative solitons

O.V. Charkina^{1,2}, M.M. Bogdan¹

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

²University of Luxembourg, Luxembourg City, Luxembourg

Nonlinear effect of localization of spin excitations on non-equilibrium domain walls in ferromagnets

O.V. Charkina^{1,2}, I. Poltavsky², M.M. Bogdan¹

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

²University of Luxembourg, Luxembourg City, Luxembourg

Zero sound in a quantum gas of spin-3/2 atoms with multipole exchange interaction

M. Bulakhov^{1,2}, A.S. Peletminskii^{1,2}, and Yu.V. Slyusarenko^{1,2}

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

SECTION 9. TECHNOLOGIES AND INSTRUMENTATION FOR PHYSICAL EXPERIMENTS

Section Chair: Ms. Anna Herus

ORAL PRESENTATIONS

TUESDAY, 6 JUNE

15:00 – 15:20 and 15:40 – 16:00

Performance evaluation of superconductive microwave resonators for axion detection

A.Alimenti¹, N. Pompeo¹, K. Torokhtii¹, P. Vidal García¹, E. Silva¹

¹Dept. of Industrial, Electronic and Mechanical Engineering, Roma Tre University

Via Vito Volterra 62, 00146 Roma, Italy

Technological Limitations and Performances of Superconducting Metamaterial: Laser Scanning Microscopy Analysis

A.A. Leha¹, A.P. Zhuravel¹, A.V. Ustinov²

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

²Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

Designing cooled UHF HEMT preamplifier with microwatt power dissipation for flux qubit quantum measurements

O. Turutanov^{1,2}, A. Korolev³, M. Baranek¹, S. Kern¹, P. Neilinger¹, M. Grajcar¹

¹Comenius University Bratislava, Mlynská dolina F2, Bratislava, Slovak Republic

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

³Institute of Radio Astronomy, NAS of Ukraine, Kharkiv, Ukraine

IR spectra of cryocondensates of a mixture of water and methanol with nitrogenO. Vorobyova^{1,2}, D. Sokolov^{1,2}¹ Al-Farabi Kazakh National University, Almaty, Kazakhstan² Almaty Technological University, Almaty, Kazakhstan**POSTERS**

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TUESDAY, 6 JUNE, 16:40 – 17:00**WEDNESDAY, 7 JUNE, 16:40 – 17:00****Cryovacuum spectrophotometer for the study of astrophysical ice**A. Akylbayeva, D. Yerezhep, D. Sokolov, O. Golikov, E. Korshikov, A. Aldiyarov

Al-Farabi Kazakh National University, Almaty, Kazakhstan

The optical system for patient identificationO.O. Kravchuk, O.V. Glukhov, V.V. Anufriiev, Ye.V. Levchenko, E.V. Linnyk, Ye.P. Fedorenko

Kharkiv National University of Radio Electronics, Kharkiv, Ukraine

Cryogenic liquid target station for laser-plasma interaction at high-repetition rateN. Gamaiunova, D. Margarone, L. Giuffrida, T. Chagovets

ELI Beamlines Facility, The Extreme Light Infrastructure ERIC, Dolni Brezany, Czech Republic

Research of processes of self-organization and accumulation of greenhouse gases in cryocondensate clathrates at low temperatures.Ye. Korshikov, A. Potapchenko, D. Sokolov, D. Yerezhep

Al-Farabi Kazakh National University, Institute of Experimental and Theoretical Physics, Almaty, Kazakhstan

Design of a cryogenic cell for quantum measurements of a flux qubit as a single microwave photons counterV.Yu. Lyakhno^{1,3}, O.G. Turutanov^{1,2}¹B.Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, Kharkiv, Ukraine²Comenius University, Bratislava, Slovakia,³G.V. Kurdyumov Institute for Metal Physics, , Kyiv, Ukraine**Simplified method of micro- and nanostructures generation by low-power ultrasound device**M. V. Kosevich^{1,2}¹B.Verkin Institute for Low Temperature Physics and Engineering of the NAS of Ukraine, Kharkiv, Ukraine²V.N. Karazin Kharkov National University, 4 Svobody sq., 61022, Kharkiv, Ukraine**Precision temperature controller for cryostats**H. Ban, D. Gal, A. Haysak, A. Molnar

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

Experimental Measurement of Amplitude-Time Characteristics of Thin-film Structures Based on Telluride-CadmiumD.S. Shkoda, M.V. Kirichenko, K.O. Minakova, R.V. Zaitsev

National Technical University “Kharkiv Polytechnic Institute”, Kharkiv, Ukraine

Laser Scanning Microscopy of Planar Superconductors

A.P. Zhuravel

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