

CC-2010 Program

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July 26, School of Young Scientists:

7.30 - 8.50 *Breakfast*

9.10 - 9.30 **Opening, ISSP**

Morning session: chairman - M.A. Strzhemechny

9.30 - 10.15 **D. Lee** “50 Years of Matrix Isolation of Atomic Free Radicals”

10.15 - 11.00 **R. Hemley** “New Findings in Simple Molecular Systems under Pressure”

11.00 - 11.15 *Coffee break*

11.15 - 12.00 **G.E. Volovik** “Topological media: Quantum Liquids, Topological Insulators and Quantum Vacuum”

12.00 - 14.00 *Lunch*

Afternoon session: chairman - E.B. Gordon

14.00 - 14.45 **M.A. Strzhemechny** “Molecular Semiconductor Fullerite C₆₀”

14.45 - 15.30 **V.V. Nesvizhevsky** “Experiments with Ultracold Neutrons”

15.30 - 15.50 *Coffee break*

15.50 - 16.35 **V.L. Tsymbalenko** “A Mystery of Giant Growth Rate for the ⁴He Crystal Facets”

19.00 **WELCOME PARTY**
Chernogolovka Hotel

July 27, CC-2010 Sessions:

7.30 - 8.50 *Breakfast*

9.00 - 9.10 **CC-2010 Opening**

Morning session: chairman - G.E. Volovik

9.10 - 9.40 **Yu.E. Lozovik** “Quantum Crystals and Formation of Supersolid from Excitations in Solid Matter”

9.40 - 10.10 **O.F. Petrov** “Dust Liquids and Crystals at Cryogenic Dusty Plasma”

10.10 - 10.30 *Coffee break*

10.30 - 11.00 **R. Hemley** “Melting Behavior of Hydrogen at Megabar Pressures”

- 11.00 - 11.30 I.L. Iosilevski** “New Data on Shock Compression of Liquid Nitrogen in 1-3 Megabar Range”
- 11.30 - 12.00 Yu.A. Freiman** “Lattice Distortion and Raman Scattering in HCP Cryocrystals under Pressure”

12.00 - 14.00 *Lunch*

Afternoon session: chairman - A. Jezowski

- 14.00 - 14.30 E. Yakub** “Fluid-Fluid Phase Transition in Strongly Compressed Polymerizing Nitrogen”
- 14.30 - 15.00 V.E. Bondybey** “Matrix Isolation – Almost 100 Years Old, but Still Hale and Hearty”
- 15.00 - 15.30 P. Leiderer** “Colloids as Model Systems for Condensed Matter”
- 15.30 - 15.50 *Coffee break*
- 15.50 - 16.20 M.A. Strzhemechny** “Novel Mechanism of the Negative Expansion of Fullerite C₆₀ Doped with Chemically Neutral Species”
- 16.20 - 16.50 V.A. Konstantinov** “Heat Transfer in Solid N-alkanes”

17.00 - 19.00 *Poster session*

18.00 - 19.00 *Roundtable “Cryocrystals” (chairman: Yu.A. Freiman)*

19.00 *Dinner*

July 28:

7.30 - 8.50 *Breakfast*

Morning session: chairman - Yu.E. Lozovik

- 9.10 - 9.40 V. Lebedev** “Probing the Phonon Spectra of Condensed ⁴He with Atomic Impurities”
- 9.40 - 10.10 V.A. Benderskii** “Regular-Chaotic Transitions in Quantum Dynamics of Nanosystems”
- 10.10 - 10.30 *Coffee break*
- 10.30 - 10.50 R. Jochemsen** “Crystal Shape and Crystal Growth of ³He: The Influence of Magnetic Order”
- 10.50 - 11.30 I.A. Todoschenko** “Nuclear Spin Ordering on the Surface of a ³He Crystal: Magnetic Steps”
- 11.30 - 12.00 N.P. Mikhin** “The Effect of ³He Impurities on New Phase Nucleation under Bcc-Hcp Phase Transition in Helium Solid”

12.00 - 14.00 *Lunch*

Afternoon session: chairman - V.V. Khmelenko

- 14.00 - 14.30 S.N. Burmistrov** “Oscillation Spectra of a Crystal ⁴He Facet and Its Destruction with Generating Crystallization Waves”
- 14.30 - 15.00 J.P. Toennis** “A Quantum Theorem of Corresponding States Study of Small Quantum Fluid Clusters”
- 15.00 - 15.30 H. Ikegami** “Wigner Crystals Confined in Micrometer-Wide Channels”
- 15.30 - 15.50 *Coffee break*

- 15.50 - 16.20 **J. Eloranta** “Solvation of Impurities in Bulk Superfluid Helium”
- 16.20 - 16.50 **V.M. Atrazhev** “Atomic and Molecular Spectra Emitted by Normal Liquid ^4He Excited by Corona Discharge”
- 16.50 - 17.20 **V.A. Slipko** “Propagation of Strongly Nonlinear Second Sound Waves in Anisotropic Phonon Systems”
- 17.00 - 19.00 *Poster session*
- 19.00 *Sashlyk party (ISSP)*

July 29:

- 7.30 - 8.50 *Breakfast*
- 9.30 *Excursion (from the Hotel)*

July 30:

- 7.30 - 8.50 *Breakfast*
- Morning session: chairman - V. Lebedev**
- 9.10 - 9.40 **E.V. Savchenko** “Radiation Effects in Atomic and Molecular Cryocrystals Probed by Optical and Current Spectroscopy”
- 9.40 - 10.10 **A. Drobyshev** “Structural Phase Transitions in Thin Films Glassy Condensates”
- 10.10 - 10.30 *Coffee break*
- 10.30 - 11.00 **E. Misochko** “High Resolution EPR Spectroscopy of High-Spin Pyridylnitrene Molecules in Solid Argon”
- 11.00 - 11.30 **V.V. Khmelenko** “Electron Spin Resonance Studies of Hydrogen and Deuterium Atoms in Krypton-Helium Condensates”
- 11.30 - 12.00 **S. Vasiliev** “Magnetic Resonance Studies of Atomic Hydrogen Stabilized in Solid H_2 at Temperatures below 1 K”
- 12.00 - 14.00 *Lunch*
- Afternoon session: chairman - J. Eloranta**
- 14.00 - 14.30 **E.B. Gordon** “The Structure and Properties of Metallic Nanowires Formed in Quantized Vortices of Superfluid Helium”
- 14.30 - 15.00 **B.M. Smirnov** “Kinetic Model for Metal Atoms Coalescence in Superfluid Helium”
- 15.00 - 15.30 **L.V. Abdurakhimov** “Classical Capillary Turbulence on the Surface of Quantum Liquid He-II”
- 15.30 - 15.50 *Coffee break*
- 15.50 - 16.10 **V.B. Efimov** “Quantum Turbulence in Superfluid Helium at $T \geq 0$ ”
- 16.10 - 16.30 **A.I. Golov** “The Amount of Non-Classical Rotational Inertia in Solid ^4He as a Function of the Crystal Quality”
- 16.30 - 16.50 **S.K. Nemirovsky** “Vortex Fluid Relaxation Model for Torsional Oscillation Responses of Solid ^4He ”
- 17.00 - 19.00 *Poster session*
- 18.00 - 19.00 *Roundtable “Condensed helium” (chairman: A.I. Golov)*
- 19.00 *Dinner (ISSP)*

July 31:

7.30 - 8.50 *Breakfast*

Morning session: chairman - P. Leiderer

9.10 - 9.40 A. Dyugaev “Charged Impurity Clusters in Liquid Helium”

9.40 - 10.10 A.G. Khrapak “Negative Ions in Liquid Helium”

10.10 - 10.30 *Coffee break*

10.30 - 11.00 V.B. Shikin “Dynamical Phenomena with Participation of Charged Clusters in Cryogenic Matter”

11.00 CLOSING

12.00 -14.00 *Lunch*

Poster Sessions Program

July 27:

High-pressure studies

1. Ie.Ie. Gorbenko, I.V. Zhikharev, E.P. Troitskaya, Val.V. Chabanenko, and N.V. Kuzovoy, "Ab Initio Calculation of Three-Body Interaction in Cryocrystals under Pressure" (p. 52)
2. V. S. Vorob'ev, V. G. Novikov, "Cell Model of Hydrogen Liquid at Megabar Pressures" (p. 56)
3. L.N. Yakub, "Phase Transition Line of Solid Molecular Nitrogen into CG-Polymeric Phase" (p. 85)
4. P.V. Kashtanov, B.M. Smirnov, and E.B. Gordon, "Equation of State for Compressed Inert Gases" (p. 91)
5. O. Degtyareva, C.L. Guillaume, J.E. Proctor, E. Gregoryanz, "Open Questions in Metallisation and Superconductivity of Silane" (p. 109)
6. V.F. Degtyareva, "Low Melting Point in Compressed Alkali Metals: Electronic Origin" (p. 110)
7. E. Gregoryanz, "On Quantum Effects in Dense Lithium" (p. 111)

Dusty plasma studies

8. S.N. Antipov, M.M. Vasiliev, O.F. Petrov and V.E. Fortov, "Dense Dusty Plasma Structures in Cryogenic DC Glow Discharges" (p. 49)

Fullerenes + Graphite

9. M.I. Bagatskii, V.V. Sumarokov, A.V. Dolbin, V.G. Manzhelii, B. Sundqvist, "Low Temperature Heat Capacity of Fullerite C₆₀ Doped with CD₄" (p. 45)
10. I. V. Legchenkova and M. A. Strzhemechny, "Dynamics of Dopant Particles in Octahedral Voids of Fullerite C₆₀" (p. 46)
11. A.V. Dolbin, V.B. Esel'son, V.G. Gavrilko, V.G. Manzhelii, S.N. Popov, N.A. Vinnikov, and B. Sundqvist, "Quantum Effects in Radial Thermal Expansion of Single-Walled Carbon Nanotube Bundles Doped with Helium" (p. 47)
12. E.I. Salamatov, "Simulation of Long-Wave Phonon Scattering at Geometric Imperfections in Nanowires by the FDTD Method" (p. 48)
13. K.V. Kravchenko, S.B. Feodosyev, I.A. Gospodarev, V.I. Grishaev, E.V. Manzhelii, E.S. Syrkin, "The Phonon Spectrum of Graphite and Stability Conditions in Quasi-Two-Dimensional Structures" (p. 53)
14. M.I. Bagatskii, V.V. Sumarokov, A.V. Dolbin, "A Simple Low Temperature Adiabatic Calorimeter-Inset for Small Samples" (p. 61)
15. V.V. Sumarokov, M.I. Bagatskii, A.V. Dolbin, V.G. Manzhelii, V.G. Gavrilko, V.B. Esel'son, N.A. Vinnikov, B. Sundqvist, "Low Temperature Specific Heat Capacity of Fullerite C₆₀" (p. 62)
16. S.B. Feodosyev, I.A. Gospodarev, V.I. Grishaev, K.V. Kravchenko, E.V. Manzhelii, E.S. Syrkin, "Quasi-Particles Spectra in Graphite Compounds with Metallic Intercalated Layers" (p. 79)

Thermal conductivity of cryocrystals

17. O.A. Korolyuk, "Thermal Conductivity of Molecular Crystals of Monoatomic Alcohols: from Methanol to Butanol" (p. 57)
18. O.I. Pursky, V.A. Konstantinov, "Thermal Expansion Effect on Phonon Localization in Simple Molecular Crystals" (p. 58)
19. V.A. Konstantinov, V.P. Revyakin, and V.V. Sagan, "Isochoric Thermal Conductivity of Isobutane" (p. 59)
20. V.A. Konstantinov, V.P. Revyakin, and V.V. Sagan, "Thermal Conductivity of Solid Cyclohexane" (p. 60)

July 28 (NOTE: posters could be put up on July 26-27!):

Cryocrystals

21. V.V. Danchuk, A.A. Solodovnik, and M.A. Strzhemechny, “Orientational Order Parameter in CO₂ – Kr Solution” (p. 50)
22. A.I. Erenburg, A.V. Leont’eva, G.A. Marinin, A.Yu. Prokhorov, “The Low Frequency Internal Friction (LFIF) and Phase Transition of Solid Oxygen” (p. 51)
23. A. Yu. Prokhorov, V.N. Vasyukov, B.Ya. Sukharevsky, A.V. Leont’eva, “Cellular Nanostructure of Methane Hydrate” (p. 55)
24. A.N. Ogurtsov, O.N. Bliznjuk, and N.Yu. Masalitina, “Thermal Inactivation of Excitonically-Induced Defect Formation in Solid Xe and Kr” (p. 54)
25. A.I. Krivchikov, O.A. Korolyuk, F.J. Bermejo, C. Cabrillo, and A. C. Hannon, “Metastable Defect Structure in Orientational Ordered Crystal of Ethanol” (p. 63)
26. P. Stachowiak, E. Pisarska, A. Jezowski, A.I. Krivchikov, “Investigation of Conversion of Methane Molecular Spins in CD₄-Kr Solid Solution” (p. 64)
27. A.N. Nechay, E.V. Gnatchenko, V.N. Samovarov, and A.A. Tkachenko, “Polarization Bremsstrahlung from Xenon Atoms and Clusters” (p. 68)
28. A. Aldiarov, “Oscillation Spectroscopy of Nanosized Structures of Indium in Cryomatrices of Condensed Gases. Methods, Installation, Results” (p. 72)
29. A. Aldiarov, “Influence of Water and Ethanol Cryocondensate Film’s Thickness on Structural-Phase Transitions in the Range of Temperatures 12-160K” (p. 73)
30. M. Aryutkina, A. Aldiarov, A. Drobyshev, V. Kurnosov, “Dynamical Transitions in Cryocondensates of Ethanol Close to Glass-Transition Temperature” (p. 74)
31. M. Aryutkina, A. Aldiarov, A. Drobyshev, V. Kurnosov, “Infrared Spectrometry of Structural-Phase Transitions in Two-Layer (Crystal-Amorphous) Films of Ethanol Cryocondensates” (p. 75)
32. I. Khyzhniy, S. Uytunov, A. Ponomaryov, G. Gumenchuk, E. Savchenko, and V. Bondybey, “Low-Temperature Post-Desorption from Solid Nitrogen” (p. 76)
33. S.A. Uytunov, I.V. Khyzhniy, E.V. Savchenko, G.B. Gumenchuk, A.N. Ponomaryov, V.E. Bondybey, “Charged Centers and Their Relaxation in Pre-Irradiated by an Electron Beam Solid Kr” (p. 77)
34. V.L. Vakula, Yu.S. Doronin, M.Yu. Libin, and V.N. Samovarov, “Charged Molecular Centers in Pure Kr and Mixed Kr-Ar Clusters” (p. 78)
35. V.B. Kokshenev, “Ergodic Instability in Amorphous Solids” (p. 80)
36. I.I. Poltavsky, T.N. Antsygina, M.I. Poltavskaya, and K.A. Chishko, “Condensed Phases of Hard Core Bosons on a Square Lattice” (p. 81)
37. T.N. Antsygina, M.I. Poltavskaya, I.I. Poltavsky, and K.A. Chishko, “Two-Dimensional Hard Core Bosons at Zero Temperature: Superfluid Density and Spin Wave Dispersion” (p. 82)
38. K.A. Chishko, T.N. Antsygina, M.I. Poltavskaya, and I.I. Poltavsky, “Two Dimensional Hard Core Bosons in the Random Phase Approximation” (p. 83)
39. A.A. Solodovnik, V.V. Danchuk, and M.A. Strzhemechny, “Behavior of Structural Characteristics of CO₂ Solids with Atomic Impurities” (p. 84)
40. E.S. Syrkin, S.B. Feodosyev, I.A. Gospodarev, V.I. Grishaev, A.V. Kotlyar, K.V. Kravchenko, E.V. Manzhelii, “Similarity of the Boson Peak in Disordered Systems to the Acoustic van Hove Singularities in Regular Crystals” (p. 86)
41. A.G. Belov, M.A. Bludov, E.I. Tarasova, “D₂ Dissociation in Xe Matrix under Electron Beam Irradiation” (p. 87)
42. Yu.A. Dmitriev, “Hindered Rotation of Impurity Molecules in Ordered and Disordered Matrices” (p. 90)
43. N.V. Krainyukova, “On the Role of Distortion in the HCP vs FCC Competition in Rare Gas Solids” (p. 96)

July 30:

Solid helium

44. I.V. Kalinin, E. Kats, M. Koza, H. Lauter, V.V. Lauter and A.V. Puchkov, "Observation of the Nonequilibrium Superfluid Phase into Solid Helium within Aerogel" (p. 65)
45. V.A. Lykah, E.S. Syrkin, "The Free Energy, Pressure Change, and Twin Boundaries in Solid Helium at the bcc-hcp Phase Transition" (p. 66)
46. Ye.O. Vekhov and N.P. Mikhin, "Vacancy Destabilization of hcp Solid Helium" (p. 67)
47. V.Y. Rubanskii, V.N. Grigor'ev, A.A. Lisunov, V.A. Maidanov, S.P. Rubets, E.Y. Rudavskii, A.S. Rybalko, V.A. Tikhii, "Investigation of Thermodynamic Properties of Deformed ^4He in the Supersolid Region" (p. 70)
48. S.P. Rubets, T.N. Antsygina, K.A. Chishko, A.A. Lisunov, V.A. Maidanov, V.Y. Rubanskii, "Concentration Dependence of Fluctuation Effects in Solid ^3He - ^4He Mixtures" (p. 71)
49. V.P. Kisel, "Classical Deformation Explains the Properties of Solid/Fluid He" (p. 112)

Charges on the surface and in bulk of liquid helium

50. K.A. Nasyedkin and V.E. Syvokon, "Conductivity and Critical Field of the 2D-Electron Crystal at the Dynamic Phase Transition" (p. 97)
51. A. Dyugaev, P. Grigor'ev, E. Lebedeva, "Diffusion Transport of Negative Ions through Interface between Cryogenic Liquids" (p. 105)
52. V.V. Zavyalov, and A.A. Panov, "Surface Electrons' Current along a He-Film Covered Metal Rod" (p. 107)
53. V.E. Syvokon and K.A. Nasyedkin, "A Possible Crystal-Glass Transition in a 2D Surface Electron System" (p. 108)
54. V. Shikin, S. Nazin, "Critical Types of Electron Mobility in Cryogenic Matter" (p. 43)

Impurities in helium

55. R.E. Boltnev, V.V. Khmelenko, V.P. Kiryukhin, D.M. Lee, and V.V. Nesvizhevsky, "Oxygen-Helium Condensates as Optimal Medium for Very Cold Neutron Reflectors" (p. 88)
56. R.E. Boltnev, I.B. Bykhalo, and I.N. Krushinskaya, "Ions in Impurity-Helium Condensates" (p. 89)
57. A.V. Karabulin, E.B. Gordon, V.I. Matyushenko, V.D. Sizov and I.I. Khodos, "High Efficient Field-Induced Electron Emission from the Bundles of Nanowires Grown in Superfluid Helium" (p. 92)
58. A.N. Izotov, V.B. Efimov, "Infrared Light Interaction with Impurity Gels in Superfluid Helium" (p. 93)
59. V. Kiryukhin, V.V. Khmelenko, R.E. Boltnev, D.M. Lee, "X-ray Studies of Impurity-Helium Condensates" (p. 94)
60. L.P. Mezhev-Deglin, G.V. Kolmakov, V.B. Efimov, V.V. Nesvizhevsky, "Nanocluster Condensates in He-II as a Tool for Production of Ultra-Cold Neutrons: Experiment and Numerical Simulation" (p. 95)
61. E.A. Popov, E. Vehmanen, and J. Eloranta, "Laser Ablation of Boron in Bulk Superfluid Helium" (p. 98)
62. L.A. Surin, A.V. Potapov, B.S. Dumesh, and S. Schlemmer, "Rotational Spectroscopy of Doped Small Helium Clusters" (p. 99)

Turbulent phenomena in helium and hydrogen

63. L.V. Abdurakhimov, M.Yu. Brazhnikov, S.V. Filatov, A.A. Levchenko, "Viscous Decay of Capillary Turbulence on the Surface of Liquid Hydrogen" (p. 100)

64. V.B. Efimov, A.N. Ganshin, G.V. Kolmakov, and P.V.E. McClintock, “Decay of Second Sound Turbulence in He-II” (*p. 101*)
65. L.V. Abdurakhimov, M.Yu. Brazhnikov, S.V. Filatov, A.A. Levchenko, “Discrete Turbulent Cascade in the Dissipative Region on the Surface of Liquid Helium and Hydrogen” (*p. 102*)
66. L.V. Abdurakhimov, M.Yu. Brazhnikov, I.A. Remizov, and A.A. Levchenko, “Structure Functions of Capillary Wave Turbulence on the Surface of He-II” (*p. 103*)
67. L.P. Kondaurova, S.K. Nemirovskii, “Numerical Simulation of Vortex Tangle without Mutual Friction in Superfluid Helium” (*p. 104*)