

National Academy of Sciences of Ukraine  
Bogolyubov Institute for Theoretical Physics  
Young Scientists Council

**VIII Young Scientists Conference**  
**Problems of Theoretical Physics**

**December 12-14, 2017**  
**Kyiv, Ukraine**

**Program**

Kyiv 2017

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## Tuesday, December 12

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8-30 Registration begins

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9-50 Conference opening (Opening talk of Prof. A. G. Zagorodny)

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### Morning Session

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10-00 **Prof. B.I. Lev**

Lecture “Non-equilibrium self-gravitating systems”  
*Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv*

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10-45 **O.I. Gerasymov, A.Ya. Spivak**

O.1 “Mechanical impulse transmission through 1D nonlinear chains”  
*Odesa State Environmental University, Odesa, Ukraine*

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11-05 **V.N. Gorev, A.I. Sokolovsky**

O.2 “Conservation laws for the Landau-Vlasov kinetic equation with the nonlocal collision integral”  
*National Mining University, Dnipro*

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11-25 **A. Vidybida, O. Shchur**

O.3 “Relation between firing statistics of spiking neuron with delayed fast inhibitory feedback and without feedback”  
*Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv*

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11-45 **A.G. Magner, M.I. Gorenstein, U.V. Grygoriev**

O.4 “Ultrasonic waves in classical gases”  
*Taras Shevchenko National University of Kyiv*

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12-05 **COFFEE BREAK**

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12-25 **O.I. Gerasymov, I.A. Chernilevska**

O.5 “Levitation and jet-stream of micromechanical conglomerations in electric field”  
*Odesa State Environmental University*

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**12-45**      **K.M. Haponenko, A.I. Sokolovsky**  
“Nonequilibrium thermodynamic potential for Bose system in the  
O.6            presence of condensate”  
*Oles Honchar Dnipropetrovsk National University, Dnipro*

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**13-05**      **A.R. Kuzmak**  
“Quantum state manifolds generated by the Lie algebra”  
O.7            *Ivan Franko National University of Lviv*

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**13-25**      **O.O. Morozko, Kh.P. Gnatenko**  
“Many-particle system in noncommutative space with preserved  
O.8            rotational symmetry”  
*Ivan Franko National University of Lviv*

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**13-45**      **D.V. Piatnytskyi, S.N. Volkov**  
“Complexes of hydrogen peroxide and DNA phosphate group”  
O.9            *Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv*

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**14-05**      **O. Zdorevskyi, S.N. Volkov**  
“Role of water and hydrogen peroxide molecules in nucleic base pairs  
O.10            stabilization”  
*Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv*

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**14-25**      ***LUNCH***

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### **Afternoon Session**

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**15-30**      **V. Sagun, Ilidio Lopes**  
“Probing the neutron stars interior within the realistic equation of state”  
O.11            *Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv*

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**15-50**      **D. Savchenko, D. Iakubovskyi**  
“Testing the origin of 3.55 keV line in individual galaxy clusters  
O.12            observed with XMM-Newton”  
*Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv*

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- 16-10**      **A. Rudakovskiy, D. Iakubovskiy**  
“Cores in fermionic dark matter haloes with maximal phase-space density”  
O.13      *Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv*
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- 16-30**      **I. Babyk**  
“AGN feedback in early-type galaxies”  
O.14      *Main Astronomical Observatory of the National Academy of Science, Kyiv*
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- 16-50**      **I. Bilinsky, P. Berczik, O. Veles**  
“Performance testing of the TREE based modern GPU/N-body code implementation”  
O.15      *Main Astronomical Observatory of the National Academy of Science, Kyiv*
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- 17-10**      **M.G. Holovko, V.D. Gladush**  
“On the quantization of charged black holes”  
O.16      *Oles Honchar Dnipropetrovsk National University, Dnipro*
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- 17-30**      ***WELCOME PARTY***
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## Wednesday, December 13

### Morning Session

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- 10-00**      **Dr. S.G. Sharapov**  
Lecture      “Graphene and other Dirac materials”  
                 *Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv*
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- 10-45**      **K.V. Germash, D.V. Fil**  
                 “Non-linear electromagnetic properties of double layer graphene systems with electron-hole pairing”  
O.17      *Institute for Single Crystals of NAS of Ukraine, Kharkiv*
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- 11-05**      **V.O. Shubnyi, Yu.V. Skrypnyk, S.G. Sharapov, V.M. Loktev**  
                 “Effect of uniaxial strain on scattering from point defects in graphene”  
O.18      *Taras Shevchenko National University of Kyiv*

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**11-25**      **I.O. Starodub, Y. Zolotaryuk**  
“Fluxon scattering on dipole inhomogeneity in Josephson junction”  
O.19      *Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv*

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**11-45**      ***COFFEE BREAK***

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**12-05**      **O.Y. Pastukh, V.E. Sakhnyuk, D.M. Shvalikovskiy**  
“The influence of an external magnetic field on the critical current in  
O.20      SNINS contacts near the critical temperature”  
*Lesya Ukrainka Eastern European National University, Lutsk*

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**12-25**      **A.M. Shutovskiy, A.V. Svidzinsky, V.E. Sakhnyuk**  
“The functional integration method in the two band superconductivity  
O.21      theory”  
*Lesya Ukrainka Eastern European National University, Lutsk*

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**12-45**      **V.V. Bezghuba, A.A. Kordyuk**  
“Brillouin zone of iron-based superconductor in kz direction”  
O.22      *Kyiv Academic University*

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**13-05**      **D.Y. Kononenko, O.V. Pylypovskyi, Yu. Gaididei, D.D. Sheka**  
“Spin waves propagation in antiferromagnetic ring”  
O.23      *Taras Shevchenko National University of Kyiv*

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**13-25**      **A.I. Korniienko, O.V. Pylypovskyi, V.P. Kravchuk, D.D. Sheka,  
Yu. Gaididei**  
O.24      “Magnetic metamaterials: curvature induced magnonic crystals in  
nanowires”  
*Taras Shevchenko National University of Kyiv*

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**13-45**      **C.M. Scherbakov, A.N. Morozovska, Yu. M. Vysochanskii**  
“Spatially modulated incommensurate phases induced by flexoelectric  
O.25      coupling in ferroelectrics”  
*Taras Shevchenko National University of Kyiv*

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**14-05**      ***LUNCH***

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## Afternoon Session

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- 15-15**      **O. Boliashova, V. Krivoruchko**  
“Longitudinal spin dynamics in antiferromagnets: Diagrammatic approach”  
O.26      *A.A. Galkin Donetsk Institute for Physics and Engineering, NAS of Ukraine, Kyiv*
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- 15-35**      **O.R. Sulymenko, O.V. Prokopenko**  
“THz-frequency AC signal source based on antiferromagnetic spin-Hall oscillator”  
O.27      *Taras Shevchenko National University of Kyiv*
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- 15-55**      **L.Yu. Kharkhalis, O.O. Korolevych, O.V. Dulkaï**  
“Electronic structure of the InSe diluted magnetic semiconductors”  
O.28      *Uzhhorod National University, Institute of Physics and Chemistry of Solid State*
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- 16-15**      **E.A. Eliseev, I.S. Vorotiahin, Y.M. Fomichov, M.D. Glinchuk, S.V. Kalinin, Y.A. Genenko, A.N. Morozovska**  
O.29      “Flexo-chemical coupling in ferroelectric thin films with defect layer”  
*Institute for Problems of Materials Science, NAS of Ukraine, Kyiv*  
*Charles University, Prague, Czech Republic*
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- 16-35**      **S.E. Reschikoff**  
“The bias error of flicker noise spectral exponent estimation”  
O.30      *Ulyanovsk State Technical University, Ulyanovsk, Russia*
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- 16-55**      **O.A. Hrebunov, V.F. Korolovych, L.A. Bulavin, L.Yu. Matsuy**  
“Dielectric properties of nanocellulose aqueous suspension”  
O.31      *Taras Shevchenko National University of Kyiv*
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- 17-15**      **A.V. Bezvershenko, A.K. Kolezhuk, B.I. Ivanov**  
“Stabilization of magnetic skyrmions by RKKY interactions”  
O.32      *Taras Shevchenko National University of Kyiv*

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**Thursday, December 14**

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**Morning Session**

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**10-00**      **Dr. A.G. Magner**

Lecture      “Kinetic approaches to the collective nuclear-matter dynamics”  
*Institute for Nuclear Research, NAS of Ukraine, Kyiv*

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**10-45**      **O. Ivanytskyi, K. Bugaev, E Nikonov, E-M. Ilgenfritz, V. Sagun,**  
**I. Mishustin, V. Petrov, G. Zinovjev**

O.33      “The liquid droplet view on the phase transition in SU(2) gluodynamics”  
*Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv*

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**11-05**      **R.V. Poberezhnyuk**

O.34      “Quantum van der Waals model versus Walecka model of nuclear matter”  
*Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv*

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**11-25**      **N.V. Kolomojets, V. Skalozub**

O.35      “Color structure of magnetic mass of chromomagnetic field”  
*Oles Honchar Dnipropetrovsk National University, Dnipro*

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**11-45**      **P. Minaev, V. Skalozub**

O.36      “Electroweak phase transition in a spontaneously magnetized vacuum”  
*Oles Honchar Dnipropetrovsk National University, Dnipro*

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**12-05**      **O. Panova**

O.37      “Cumulative production of nucleons by heavy baryonic resonances in  
proton-nucleus collisions”  
*Taras Shevchenko National University of Kyiv*

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**12-25**      **A. Pevzner, V. Skalozub**

O.38      “Possibility of the Abelian  $Z'$  with a non-narrow resonance within the  
model-independent approach”  
*Oles Honchar Dnipropetrovsk National University, Dnipro*

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**12-45**      *Juri consultation*

**13-00**      *Closing of the conference*