

# Program

## BRAZIL-JINR FORUM

“Frontiers in Nuclear, Elementary Particle, and Condensed Matter Physics”

Dubna, June 15-19, 2015

**June 15 (Monday)**

**9:30 Registration** (International Conference Hall)

**10:00 – 13:30: Plenary session** (International Conference Hall)

10:00 Opening

10:30 **V.A. Matveev** (Director of JINR) “Joint Institute for Nuclear Research: Past, Present and Future”

**11:00-11:20** Coffee break

Chairman **N.A. Russakovich**

11:30 **M.G. Itkis** (JINR) “Nuclear and Condensed Matter Physics at JINR”

12:00 **P.R.S. Gomes** (UFF) "Nuclear Physics in Brazil"

12:30 **R. Lednicky** (JINR) “Elementary Particle and Relativistic Heavy Ion Physics”

**13:00-14:00** Lunch

**14:00 – 16:00: Plenary session** (International Conference Hall)

Chairman **P.R.S. Gomes**

14:00 **V.N. Shvetsov** (FLNP JINR) "Research Directions in the Frank Laboratory of Neutron Physics"

14:30 **D.V. Naumov** (DLNP JINR) “JINR Neutrino Program”

15:00 **E. Kemp** (Unicamp) "Experimental Neutrino Physics in Brazil"

15:30 **A.S. Sorin** (JINR) “Status of NICA Project ”

16:15-18:00 **Visit to the Veksler and Baldin Laboratory of High Energy Physics**

**18:30 Welcome Party aboard a ship and cruise at Volga river**

**June 16 (Tuesday)**

**9:30-13:00 Plenary Session** (International Conference Hall)

Chairman **V.S. Bagnato**

9:30 **V. Voronov** (BLTP JINR) "Theoretical Physics at BLTP"

10:00 **A. Ferraz** (IIP) "Strongly Correlated Electrons in High Temperature Superconductors"

10:30 **V.V. Korenkov** (LIT JINR) "Status and the Prospects of Development of Laboratory of Information Technologies"

11:00-11:30 Coffee break

Chairman **M.G. Itkis**

11:30 **V.K. Utyonkov** (FLNR JINR) "Synthesis of Superheavy Elements with  $Z=112-118$ "

12:00 **A.G. Popeko** (FLNR JINR) "Accelerator Complex of the Flerov Laboratory: Present and Future"

12:30 **N. Medina** (USP) "Nuclear Physics Open Laboratory of the São Paulo University"

13.00-14.00 Lunch

Chairman **E. Kemp**

14:00 **E.A. Krasavin** (LRB JINR) "Radiobiological Investigations at the JINR Accelerators"

14:30 **V.V. Glagolev** (DLNP JINR) "Beyond SM at LHC (ATLAS), Mu2E, g-2, COMET"

15:15 -16:30 Visit to **Flerov Laboratory of Nuclear Reactions**

16:30-18:00 Visit to **Frank Laboratory of Neutron Physics**

**19:00 Concert** (JINR Scientific Club)

**June 17 (Wednesday)**

**7:30 – 20:00 Excursion to Moscow (Kremlin, city tour)**

**June 18 (Thursday)**

**9:30-18:00 Workshops at JINR Laboratories (BLTP, DLNP, FLNP)**

**BLTP**

**Ultracod Gases & Condensed Matter**

**BLTP (Conference Hall)**

*Chairman* **A. Ferraz**

09:30 V.S. Bagnato (IFSC) "Quantum Turbulence in Atomic Trapped Superfluid"

10:00 L. Tomio (UFABC) "Atomic Bose-Einstein Condensates, with Optical Lattices, Field-Induced Dipole Moments and Spin-Orbit Coupling"

10:30 V.O. Nesterenko (BLTP JINR) "Nonlinear Transport of Atomic Bose-Einstein Condensate: Relation to Josephson Effect"

*11:00-11:20 Coffee break*

*Chairman* **L. Tomio**

11:20 V.S. Melezhik (BLTP JINR) "Ultracold Resonant Processes in Atomic and Molecular Traps"

11:50 E.A. Kochetov (BLTP JINR) "Ising Version of the t-J Model: Implications for the Underdoped Cuprates"

12:20 V. Yushankhai (BLTP JINR) "Quantum Models of Magnetism in Strongly Correlated Electron Systems with Strong Spin-Orbit Interaction"

*12.50-14.30 Lunch*

*Chairman* **V.A. Osipov**

14:30 Y.M. Shukrinov (BLTP JINR) "Modeling of Intrinsic Josephson Junctions in High Temperature Superconductors"

15:00 M. Maiti (BLTP JINR) "Josephson Junctions Detectors for Majorana and Dirac Fermions"

15:30 I.R. Rahmonov (BLTP JINR) "Phase Dynamics of long Josephson junctions"

*16:00-16:20 Coffee break*

*Chairman* **Y.M. Shukrinov**

16:20 O.G. Isaeva (BLTP JINR) "Electron Transport Through Graphene-DNA-Graphene Junction. DNA Decoding"

16:50 V.L. Katkov "Graphene-Based Tunnel Junction"

17:20 N. Bondyopadhyaya (BLTP JINR) "Statistics of Scattered Photons from a Driven Three-Level Emitter in a One-Dimensional Open Space"

## Elementary Particle Physics, Nuclear and Hadronic Matter under Extreme Conditions

### BLTP (Blokhintsev Hall)

*Chairman* **E.M. Ilgenfritz**

09:30 A.E. Dorokhov (BLTP) "Hadronic Light-by-light Contribution to Muon  $g-2$  within the Nonlocal Chiral Quark Model"

10:00 A.V. Bednyakov (BLTP JINR) "High Order Corrections for the Vacuum Stability Analysis of the SM"

10:30 A. Cucchieri (USP) "Non-Perturbative Studies of Color Confinement"

*11:00-11:20 Coffee break*

*Chairman* **O. Teryaev**

11:20 E.M. Ilgenfritz (BLTP JINR) "QCD Phase Structure and Anomalous Transport in a Chiral Environment as Seen in Lattice Experiments"

11:50 D. G. Torrieri (Unicamp) "The Quark-Gluon Plasma: a Few Results and Many Puzzles"

12:20 V.D. Toneev (BLTP JINR) "Strong Electromagnetic Fields and Flow in Relativistic Heavy-Ion Collisions"

12:50 I.L. Bogolubsky (LIT JINR) "Topological Solitons vs Topological Defects"

*13.20-14.30 Lunch*

*Chairman* **A. Cucchieri**

14:30 T. Frederico (ITA) "Solution of the Bethe-Salpeter Equation in Minkowski Space"

15:00 S.N. Nedelko (BLTP JINR) "Domain Wall Network as QCD Vacuum: Confinement, Chiral Symmetry, Hadronization"

15:30 L.L. Jenkovszky, (BITP & JINR) "Supercooled, Metastable States at NICA"

*16:00-16:20 Coffee break*

*Chairman* **A.E. Dorokhov**

16:20 I.V. Anikin (BLTP JINR) "Factorization Theorem and Gluon poles"

16:50 M. Deka (BLTP JINR) "Lattice Studies on Proton Spin Structure"

17:20 A.Ja. Silenko (BLTP JINR) "Manifestations of the Rotation and Gravity of the Earth in Spin Experiments"

## Mathematical physics, cosmology and gravity

### BLTP (DIAS Hall)

Chairman **A.P. Isaev**

09:30 I.L. Shapiro (UFJF) "Renormalization and Stability in Higher Derivative Models of Quantum Gravity"

10:00 S.A. Fedoruk (BLTP JINR) "Higher Spin Fields in Twistor Formulation"

10:30 D. Gitman (USP) "QED with x-Electric Potential Steps"

*11:00-11:20 Coffee break*

Chairman **I.L. Shapiro**

11:20 J.C. Fabris (UFES) "Quantum Cosmology with Scalar Field"

11:50 E. Davydov (BLTP JINR) "Cosmology in Horndeski Gravity"

12:20 F. Toppan (CBPF) "Conformal Galilei Invariant PDEs"

*12.50-14.30 Lunch*

Chairman **S.A. Fedoruk**

14:30 Ya. Shnir (BLTP JINR) "Non Abelian Composite Configurations in AdS<sub>4</sub> Spacetime"

15:00 D. Melnikov (UFRN) "Knots: from Hadron Physics to Biology"

15:30 A.K. Motovilov (BLTP JINR) "Upper Bounds on Variation of Spectral Subspaces of a Hermitian Operator"

*16:00-16:20 Coffee break*

Chairman **D. Gitman**

16:20 V.P. Gerdt (LIT JINR) "Hidden Lagrangian Constraints and Differential Thomas Decomposition"

16:50 T. Koide (UFRJ) "Unified Formulation of Quantum and Classical Behaviors in a Variational Principle"

17:20 A. Khvedelidze (LIT JINR) "On Steering of Entangled Particles States in an Intense Laser Field"

## **Nuclear Physics**

### **BLTP (Lecture Hall 1<sup>st</sup> floor)**

*Chairman* **D. Menezes**

09:30 M.S. Hussein (USP) "Fusion and Scattering of Exotic Nuclei"

10:00 P.R.S. Gomes (UFF) "Breakup of Weakly Bound Nuclei and its Influence on Fusion"

10:30 V.V. Sargsyan (BLTP JINR) "Deriving Capture and Reaction Cross Sections from Observed Quasi-Elastic and Elastic Backscattering"

*11:00-11:20 Coffee break*

*Chairman* **M.S. Hussein**

11:20 D. Menezes (UFSC) "Relativistic Mean-Field Hadronic Models under Nuclear Matter Constraints"

11:50 A.I. Vdovin (BLTP JINR) "Thermal Effects on Weak Interaction Mediated Processes in Stellar Environment"

12:20 V.O. Nesterenko (BLTP JINR) "Skyrme-RPA Analysis of Multipole Giant Resonances"

12:50 A.V. Sushkov (BLTP JINR) "Structure of the Low-Lying States in the Odd-Mass Nuclei with  $Z \sim 100$ "

*13.20-14.30 Lunch*

## **DLNP**

### **(DLNP Conference Hall)**

9.30 D.V. Naumov (DLNP JINR) "Baikal GVD and TAIGA – Perspectives in Neutrino and Gamma Astronomy"

10.00 D.S. Shkirmanov (BLTP JINR) "Quantum Field Theory of Neutrino Oscillations and Reactor AntiNeutrino Anomaly"

10.30 S.A. Kotov (DLNP JINR) "R&D of Particle Detectors"

*11.00-11.20 Coffee-break*

11.20 N.V. Anphimov (DLNP JINR) "R&D of ECAL and Photo-Detectors"

11.50 G.V. Mitsin (DLNP JINR) "Applied Research: Radiotherapy and Associated Diagnostics"

12.20 Yu. A. Usov (DLNP JINR) "Method to Reach Ultra Low Temperatures and its Use in Experimental Physics"

*12.50-15.00 Lunch*

15.00 Round Table: Discussion of possible collaborations between DLNP JINR and Brazil

18.30 **Excursion to Phasotron and Medical Technical Complex for Proton Therapy (DLNP JINR)**

## **FLNP**

10.00 - 13.00 **Excursion in Dubna (O.A. Culicov)**

*13.00-14.00 Lunch*

***FLNP conference hall***

14.00 – 14.30 A. Soares Leal ( CDTN) “New Applications Using the TRIGA IPRR1 Research Reactor of CDTN”

14.30 - 15.00 A.M. Balagurov “Condensed Matter Physics Investigations at FLNP IBR-2 Reactor”

*NICM and C IBR-2 S departments*

15.00 - 15.45 Discussions in Department of Neutron Investigations of Condensed Matter

16.00– 16.30 V.I. Prikhodko “Development of Elements of Neutron Spectrometers in FLNP”

16.30 - 17.00 Discussions in Department of Complex of IBR-2 Spectrometers

17.00 – 17.30 Concluding discussions with FLNP Directorate

**19:30 Banquet (JINR Scientific Club)**

**June 19 (Friday)**

**9:30-11:30 Plenary session** (International Conference Hall)

Chairman **N. Medina**

9:30 **E. A. Stokovsky** (VBLHEP JINR) “Experiments at the Nuclotron Beams”

10:00 **A. Vodopyanov** (VBLHEP JINR) “Participation of JINR Scientists in International Collaboration Experiments at CERN”

10:30 **S. Pakuliak** (UNC JINR) “Educational Programs of the JINR University Center”

**11:00-11:30** Coffee Break

11:30 **Round Table discussion** (signing Forum documents)

**12:30 Closing**

13.00-14.00 Lunch