

## PROGRAM

(preliminary (24.11.2009))

### Annual Workshop on the "Non-ideal Plasma Physics"

(30/11–01/12, 2009, Presidium RAS, Gagarina sq, 32a, Moscow)

Chair - academician Vladimir Fortov

**30 November - 9.30 - 13.00** (*lunch break 13.00-14.00*)

**FORTOV V. - Opening talk**

---

#### **Physics of extreme state of matter**

1. THE QUARK GLUON PLASMA, A FEW RESULTS AND MANY PUZZLES

- **Torrieri G.** – *FIAS (Frankfurt Institute for Advance Study) Germany*

---

2. RECENT TRENDS IN THE HIGH-DENSITY EOS

- **Blaschke D.** - *Wroclaw University, Poland // Joint Inst. Nuclear Research, Dubna, Moscow.*

---

3. COULOMB AND SURFACE EFFECTS IN "PASTA" PHASES IN NUCLEAR MATTER

- **Maruyama T.** – *Advanced Science Research Center, Japan Atomic Energy Agency*

---

4. ENVELOPES OF NEUTRON STARS WITH STRONG MAGNETIC FIELDS

- **Potekhin A. Y.**, A. D. Kaminker, D. G. Yakovlev - *loffe Institute, S-Petersburg*

---

5. PLASMA POLARIZATION IN MASSIVE ASTROPHYSICAL BODIES

- **Iosilevskiy I.** – *JIHT RAS, MIPT (St. University)*

---

#### **Experimental studies of non-ideal plasmas**

6. STATUS OF HIGH ENERGY DENSITY PHYSICS AT GSI

- **Varentsov D.** – *GSI, Darmstadt, Germany*

---

7. LASER WAKEFIELD ACCELERATION OF SUPERSHORT ELECTRON BUNCHES IN GUIDING STRUCTURES

- **Andreev N.E.**, S.V. Kuznetsov<sup>1</sup>, B. Cros<sup>2</sup>, G. Maynard<sup>2</sup>, P. Mora<sup>3</sup>, C.G. Wahlström<sup>4</sup>, F. Wojda<sup>2</sup>  
- *OIBT PAH, Uni. Paris, Ecole Polytechnique, Uni. Lund.*

---

8. SHOCK WAVES EXCITED BY FEMTOSECOND LASER PULSES IN METALS

- **Ashitkov S.I.**, M.B.Agranat, P.S.Komarov, A.V.Ovchinnikov, D.S.Sitnikov.- *JIHT RAS*

---

9. SPALLATIVE-CAVITATIVE ABLATION OF METALS, SEMICONDUCTORS, DIELECTRICS BY ULTRASHORT LASER PULSE

- **Inogamov N.A.**, V.V. Zhakhovskii, V.A. Khokhlov, V.V. Shepelev, Yu.V. Petrov, S.I. Anisimov, M.B. Agranat, S.I. Ashitkov, P.S. Komarov, A.V. Ovchinnikov, D.S. Sitnikov, V.E. Fortov, A.Ya. Faenov, I.Y. Skobelev, T.A. Pikuz - *Landau Inst. of Theoretical Physics RAS, Chernogolovka, JIHT RAS*

---

10. INVESTIGATION OF TANTALUM AND TUNGSTEN AT NEAR MELTING STATES HEATED BY HEAVY ION BEAM IN HIHEX ASSEMBLY

- **Nikolaev D.N.**, D. Varentsov, A.A. Golubev, A.V. Kancirev, M. Kulish, I. Ling, N. Markov, V. B. Mintsev, A.A. Pyalling, V.Ya. Ternovoi, V. Turtikov, S. Udrea, A. D. Fertman, D.H.H. Hoffmann, A. Hug, A.V. Hudomyasov, K.V. Khishchenko, B.Yu. Sharkov, N.S. Shilkin, D.S. Yuriev – *IPCP RAS; JIHT RAS, ITEP, GSI, Germany*

---

11. EXPERIMENTAL STUDY OF THERMODYNAMICS FOR HELIUM DENSE PLASMA UNDER QUASI-ISENTROPIC COMPRESSION – **Zhernokletov M.V.** – *VNIIEF (Sarov)*

---

=====

**30 November - 14.00 - 18.00**

12. STUDY OF THE NEAR-CRITICAL POINT STATES OF LIQUID - VAPOR PHASE TRANSITION OF METALS UNDER ISENTROPIC EXPANSION OF SHOCK-WAVE COMPRESSED POROUS SAMPLES

- **Emelyanov A.N.**, D.N.Nikolaev, A.A.Pyalling, V.Ya.Ternovoi – *IPCP RAS, Chernogolovka*

---

**13. MEASUREMENT OF COMPRESSION FOR INITIALLY RECOMPRESSED GASEOUS DEUTERIUM IN PRESSURE RANGE ABOVE 1200 GPa**

- **Mochalov M.A.**, Il'kaev R.I., Mikhailov A.M., Makarov Yu.M., Ogorodnikov V.A., Arinin V.A., Ryzhkov A.V. – *VNIIEF (Sarov)*

---

**14. TRANSPORT PROPERTIES OF SHOCK-COMPRESSED ARGON PLASMA IN A TRANSVERSE MAGNETIC FIELD**

- **Yuriev D.S.**, Shilkin N.S., Mintsev V.B. – *IPCP RAS, Chernogolovka*

---

**15. SHADOW REGISTRATION OF PARTICLE EXPLOSION FROM THE SURFACE OF SHOCK COMPRESSED SAMPLES**

- **Erunov S.V.**, Ogorodnikov V.A. Mochalov M.A., Mikhailov A.M. – *VNIIEF (Sarov)*

---

**16. QUASI-METAL PROPERTIES OF LIQUID CARBON AT HIGH TEMPERATURES AND PRESSURES**

- **Savvatimskiy A.I.**, Korobenko V.N. – *JIHT RAS*

---

**17. MICRON-SIZED COPPER AND TUNGSTEN CONDUCTOR MECHANISMS OF DESTRUCTION DURING THE HIGH VOLTAGE SOURCE WITH THE SUB-NANOSECOND PULSE FRONT DISCHARGE TO AN INHOMOGENEOUS COAXIAL LINE. PLASMA CHANNEL STRUCTURE**

- **Volkov N.B.**, S.V. Barakhvostov, M.B. Bochkarev, K.A. Nagayev O.R. Timoshenkova, E.A. Chingina - *Institute of Electrophysics, RAS, Ural Branch,*

---

**Numerical simulation of non-ideal plasmas**

**18. TWO-DIMENSIONAL SIMULATIONS OF STRONGLY RADIATING PLASMAS WITH THE RALEF-2D CODE**

- **Basko M.M.** - *Institute for theoretical and experimental physics, Moscow*

---

**19. MOLECULAR DYNAMICS SIMULATIONS OF FINITE-SIZE NONIDEAL PLASMAS**

- **Morozov I.V.**<sup>1</sup>, T. Raitza<sup>2</sup>, H. Reinholz<sup>2</sup>, G. Röpke<sup>2</sup> – *JIHT RAS, Uni. Rostock, Germany*

---

**20. MODELING OF EUV SOURCE ( $\lambda=13.5$  NM) FOR NANOLITHOGRAPHY BASED ON LASER OR DISCHARGE PRODUCED PLASMA**

- **Novikov V.G.**, Koshelev K.N., Ivanov V.V., Krivtsun V.M., Solomyannaya A.D., Churilov S.S., Vichev I.Yu., Kim D.A. - *Keldysh Inst. of Appl. Math., Inst. of spectroscopy RAS, Russia,*

---

**21. DENSITY OF STATES AND ENERGY DISTRIBUTION OF THE ELECTRON IN NON-IDEAL ATOMIC PLASMA: THEORY AND NUMERICAL MODELING DATA**

- **Khomkin A.L.**, Sumikhin A.S. – *JIHT RAS*

---

**22. ATOMISTIC SIMULATION OF THE INTERACTION OF ELECTROLYTE WITH GRAPHITE NANOSTRUCTURES IN ADVANCED SUPERCAPACITORS**

- **Lankin A.V.**, Norman G.E., Stegaylov V.V. – *JIHT RAS, MIPT*

---

**Theoretical studies of non-ideal plasmas**

**23. IS THE STRONGLY COUPLED GAS PLASMA EXIST?**

- **Kalitkin N.N.**, Kozlitin I.A. – *Inst. Math. Models RAS*

---

**25. ON THE SHIFT OF K- EDGE IN ABSORPTION SPECTRA OF A WARM DENSE ALUMINUM LASER- PRODUCED PLASMA**

- **Kurilenkov Yu.K.** – *JIHT RAS*

---

**26. ELECTRIC MICROFIELD DISTRIBUTIONS (EMD) AND THEIR TAILS IN ALKALI PLASMAS WITH ACCOUNT OF THE ION STRUCTURE**

- **Sadykova S.**, Ebeling W., Sokolov I.M. - *Humboldt University Berlin*

---

**27. INTERACTION OF RYDBERG ATOM WITH LOW-ENERGY ELECTONS**

- **Khikhlukha D.R.**, E.A. Manykin, B.B. Zelener, B.V. Zelener – *JIHT RAS, Kurchatov Institute, MEPHI*

---

**01 December - 9.30 – 13.00** (*lunch break 13.00-14.00*)

**Equation of State, hydrodynamics and phase transitions in non-ideal plasmas**

**1. NON-IDEAL PLASMAS HYDRODYNAMICS IN EXTREME STATE OF MATTER**

- **Son E.** – *JIHT RAS, MIPT*

---

**2. HYDRODYNAMICAL DESCRIPTION OF FIRST-ORDER PHASE TRANSITIONS IN NUCLEAR SYSTEMS**

- **Voskresensky D.N.** - *MEPHI*

---

**3. THERMAL EQUATION OF STATE FOR SHOCK-COMPRESSED DEUTERIUM**

- **Gryaznov V.K.**, *Iosilevskiy I.L.* – *IPCP RAS, Chernogolovka, JIHT RAS, MIPT*

---

**4. THERMODYNAMICS OF NONMOLECULAR NITROGEN AT HIGH TEMPERATURES AND DENSITIES**

- **Yakub E.S.**, *Yakub L.N.* - *Odessa State Economic University, Odessa Refrigeration Academy*

---

**5. COLD MELTING OF HYDROGEN**

- **Vorob'ev V.S.**, *Novikov V.G.* – *JIHT RAS, Appl. Math. Inst. RAS*

---

**6. INFLUENCE OF QUANTUM POWER LAW TAILS ON FUSION RATES IN EQUILIBRIUM PLASMAS OF ASTROPHYSICAL OBJECTS AND IN LABORATORY CONDITIONS**

- **Starostin A.N.**, *Gladush M.G., Petrushevich Yu.V.* – *TRINITI*

---

**7. EXCITED STATES OF WARM DENSE MATTER**

- **Norman G.E.**, *Skobelev I.Yu., Stegailov V.V.* – *JIHT RAS*

---

**8. STABILITY OF LIF CRYSTAL IN THE WARM DENSE MATTER STATE**

- **Stegailov V.** – *JIHT RAS*

---

**9. IMPROVED CHEMICAL MODEL FOR DENSE PLASMAS BASED ON SUPERCONFIGURATION APPROACH**

- **Shadrin A.**, *Loboda P., Popova V.* – *VNIIEF, Snezhinsk*

---

**10. RESEOS – EQUATION OF STATE BASED ON THE “CONFINED ATOM” MODEL**

- **Ovechkin A.A.**, *Novikov V.G., Grushin A.S.* – *Inst. Appl. Math. RAS*

---

**11. PRESSURE FLUCTUATIONS IN NONIDEAL PLASMA: PRECURSOR OF THE PLASMA PHASE TRANSITION**

- **Saitov I.M.**, *AV. Lankin, GE. Norman* – *JIHT RAS*

---

**01 December - 14.00 - 16.00**

**Dusty plasma investigations**

**D1. MELTING OF FLAT DUST CLUSTER DUE TO PARAMETRIC INSTABILITY CAUSED BY NANOSECOND ELECTRIC PULSES**

- **Vasilyak L.M.**<sup>1</sup>, *V.E. Fortov, G.E. Morfill*<sup>2</sup>, *A.V. Ivlev*<sup>2</sup>, *M.Y. Pustyl'nik*<sup>2</sup>, *D.N. Polyakov*<sup>1</sup>, *H.M. Thomas*<sup>2</sup>, *S.P. Vetchinin* – *JIHT RAS, Max-Planck-Institut*

---

**D2. COULOMB CLUSTERS OF DIAMAGNETIC PARTICLES IN A MAGNETIC TRAP**

- **D'yachkov L.G.**, *S.F. Savin, M.M. Vasiliev, O.F. Petrov* – *JIHT RAS, MIPT*

---

**D3. SCREENING OF THE CHARGED PARTICLE FIELD IN RARE IONIZED GAS**

- **B.M.Smirnov** – *JIHT RAS*

---

**D4. DUSY PLASMA STRUCTURES IN SUPERSONIC FLOW IN ELECTRIC DISCHARGE**

- **Mayorov S.A.**, *Antipov S.N., Petrov O.F.* – *JIHT RAS, MIPT*

---

**D5. RECONSTRUCTION OF PAIR INTERACTION POTENTIAL IN NON-IDEAL DUSTY PLASMA**

- **Lisin E.**, *Vaulina O.S., Gavrikov A.V., O.F. Petrov, N.A.* – *JIHT RAS, MIPT*

---

**D6. ABNORMAL KINETIC TEMPERATURE OF CHARGED DUST PARTICLES IN PLASMAS**

- **Timofeev A.V.**, *Norman G.E., Stegailov V.V.* – *JIHT RAS*

---

---

## **D7. THERMAL PROPERTIES OF NON-IDEAL YUKAWA SYSTEMS**

- **Khrustalyov Yu.V.**, Vaulina O.S. – *JIHT RAS*

---

## **D8. EXPERIMENTAL STUDY OF OSCILLATIONS IN DUSTY PLASMA IN ELECTRIC DISCHARGE**

- **Timirkhanov R.A.** – *JIHT RAS*

---

### **Posters**

#### **Dusty plasma investigations.**

## **D9. THERMODYNAMIC PROPERTIES OF TWO- AND THREE-DIMENSIONAL SYSTEMS WITH YUKAWA PAIR INTERACTION POTENTIAL**

**Koss X.G.**, O.S. Vaulina, O.F. Petrov, - *JIHT RAS*

---

## **D10. COMPRESSIBILITY OF DUSTY PLASMA FROM OBSERVATION OF COMPRESSION WAVE PROPAGATION**

- **Zobnin A.V.**, A.D. Usachev, O.F. Petrov, M.H. Thoma, H. Höfner, M. Kretschmer, M. Fink, G.E. Morfill  
- *JIHT RAS, Max-Planck-Institut für Extraterrestrische Physik, Garching, Germany*

---

#### **Experimental studies of non-ideal plasmas**

## **12. ELECTROCONDUCTIVITY OF LIGHT METAL HYDRIDES UNDER STRONG MULTI-SHOCK COMPRESSION**

- **Molodets A.M.**, Shakh-ray D.V., Avdonin V.V., Golyshev A.A.  
- *Institute of problems of chemical physics RAS, Chernogolovka*

---

## **13. OVERHEATING OF ELECTRIC DISCHARGE CHANNEL IN HIGH DENSITY GAS AND X-RAY RADIATION**

- **Pinchuk M.**, Rutberg F., Bogomas A., Budin A., Losev S. – *Inst. High Current RAS, St-Pb, Russia*

---

### **01 December - 16.00 – 18.00**

– **Chronicle and perspectives, general discussion. Closure**