

PROGRAM

(preliminary (15/11/2011))

Annual Workshop on the "Non-ideal Plasma Physics"

(23/11–24/11, 2011, Presidium RAS, Leninskiy prospect, 32a, Moscow)

Chair - academician Vladimir Fortov

23 November - 9.30 - 13.00 (lunch break 13.00-14.00)

FORTOV V. - Opening talk

1. HIGH ENERGY DENSITY PHYSICS WITH INTENSE HEAVY ION BEAMS

– **Hoffmann** D. M. Roth, G. Schaumann, S. Bedacht, J. Menzel, S. Udrea, J. Ling, Lars Bozyk, A. Fedenev, K. Weyrich, D. Varentsov, V. Ternovoi, D. Nikolaev, A. Pyalling, N. Shilkin, V. Mintsev, V. Turtikov, A. Fertman, A. Golubev

– TU and GSI, Darmstadt, Germany, IPCP RAS, ITEPh, Russia

2. PROTON RADIOGRAPHY OF NONIDEAL PLASMA

– **Mintsev** V.B., Kolesnikov S.A., Dudin S.V., Lavrov V.V., Utkin A.V., Shilkin N.S., Yuriev D.S., Turtikov V.I., Golubev A.A., Sharkov B.Yu., Fortov V.E.

– IPCP RAS, Chernogolovka / ITEWPh, Russia

3. AB INITIO SIMULATIONS FOR WARM DENSE MATTER: PHASE TRANSITIONS AND ISENTROPIC SHOCK COMPRESSION EXPERIMENTS

– **Redmer** R., Becker A., Holst B., French M., Lorenzen W.

– Uni-Rostock, Germany / CEA, Arpajon, France

4. PLASMA MEDICINE: PROSPECTS OF APPLICATIONS OF LOW TEMPERATURE ATMOSPHERIC PRESSURE PLASMA IN THERAPY AND STERILIZATION

– **Ermolaeva** S.A. –

5. SPATIALLY RESOLVED COLLECTIVE EXCITATIONS IN NANO-PLASMAS

– **Roepke** G. – Uni-Rostock, Germany

6. PLASMA FLOW IN A LASER TARGET AS USED IN THE CRASH PROJECT AND ITS SENSITIVITY TO THE EQUATION-OF-STATE FOR NON-IDEAL PLASMAS AND A WARM-DENSE MATTER

– **Sokolov** I.V., Khischenko K.V., Busquet M., Klapisch M., Bart van der Holst, Drake R.P.

– University of Michigan / ARTEP / JIHT RAS, Russia

Physics of extreme state of matter

7. QUARK-GLUON PLASMA AS QUANTUM LIQUID

– **Zakharov** V.I. – ITEPh, Moscow, Russia

8. GENERALIZED BETH-UHLENBECK EQUATION OF STATE FOR THE NON-IDEAL QUARK PLASMA

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

9. QUARK-GLUON PLASMA IN EXTREMELY INTENSIVE MAGNETIC FIELDS

– **Polikarpov** M.I. – ITEPh, Moscow, Russia

10. QUANTUM MONTE CARLO SIMULATIONS OF STRONGLY COUPLED QUARK-GLUON PLASMA

– **Filinov** V.S. – JIHT RAS, Russia

11. THEORETICAL MODELS OF STELLAR ATMOSPHERES OF GIANT STARS AS AN IMPORTANT ELEMENT FOR PIXEL-LENSING AND EXOPLANET SEARCHES

– **Zakharov** A.F. – ITEPh, Moscow, Russia

23 November - 14.00 - 17.00

Experimental studies of non-ideal plasmas

Joint talk:

12.A. MEASUREMENT OF THE COMPRESSIBILITY OF DEUTERIUM AND HELIUM PLASMA
at a Pressure ~ 2000 GPa

12 B. MEASUREMENT OF THE QUASI-ISENTROPIC COMPRESSIBILITY OF HELIUM PLASMA

– **Mochalov** M.A. R.I. Il'kaev, V.E. Fortov, Yu.M. Makarov, V.A. Arinin, A.A. Yukhimchuk, A.O. Blikov, V.A. Ogorodnikov, A.V. Ryzhkov – *RFNC VNIIEF (Sarov)*

13. TEMPERATURE MEASUREMENTS AND HYDROGEN TRANSFORMATION UNDER DYNAMIC COMPRESSION UP TO 150 GPa.

– **Ternovoi V. Ya.**, Nikolaev D. N., Pyalling A. A., Kvitov S. – *IPCP RAS, Chernogolovka, Russia*

14. STUDY OF TITANIUM AND CERIUM PROPERTIES UNDER SHOCK-WAVE LOADING

– **Zhernokletov M.V.**, A.E. Kovalev, V.V. Komissarov, A.M. Podurets, V.G. Simakov *et al.*
– *RFNC VNIIEF (Sarov)*

15. SIMULTANEOUS PRESSURE (WITH IMAGING INTERFEROMETER) AND TEMPERATURE MEASUREMENTS OF LEAD VAPOR IMPACT ON SAPPHIRE WALL IN ION-BEAM DRIVEN EXPERIMENTS

– **Nikolaev D.**, Ionita B., Moussati S., D.H.H. Hoffmann, A. Hug, S. Udrea, D. Varentsov, K. Weyrich, E. Brambrink, A. Fertman, A. Golubev, A. Kantsyrev, A. Khudomyasov, V. Turtikov, N. Markov, V. Mintsev, A. Pyalling, N. Shilkin, V. Ternovoi, L. Shestov, D. Yuriev – *TUD, Darmstadt; GSI, Darmstadt, Germany; LULI, Paris, France; ITEP, Moscow, Russia; IPCP, Chernogolovka, Russia*

16. NEGATIVE PRESSURES UNDER PIKO-SECOND LASER

– **Krasyuk I.K.** *et al* – *IOF RAN, JIHT RAS*

17. ELECTRICAL AND THERMALPHYSICS PROPERTIES OF LITHIUM HYDRIDE AND MANGANESE OXIDE AT HIGH PRESSURES AND TEMPERATURES

– **A.M. Molodets**, D.V. Shakh-ray, V.V. Avdonin, A.A. Golyshev – *IPCP RAS, Chernogolovka*

18. HIGH-CURRENT DISCHARGE CHANNEL CONTRACTION IN HIGH DENSITY GAS

– **Pinchuk** M. Ph.G. Rutberg, A. Bogomaz, A. Budin, Yu. Losev, A. Leks, A. Pozubenkov
– *Institute for Electrophysics and Electric Power RAS, S-Pb., Russia*

19. THE INVESTIGATION OF S - AND P-POLARIZED REFLECTIVITY PROPERTIES OF SHOCK-WAVE COMPRESSED DENSE XE PLASMAS

– **Zaporozhets** Yu., V. Mintsev, V. Gryaznov, M. Winkel, H. Reinholz, G. Röpke
– *IPCP RAS, JIHT RAS, Uni-Rostock, Germany / University of Western Australia, Australia*

20. THERMODYNAMIC STUDY OF NEW EXPERIMENTAL DATA ON SHOCK COMPRESSION OF LIQUID NITROGEN IN 1-3 MEGABAR RANGE

– **Iosilevskiy I.** – *JIHT RAS, MIPT, Russia*

21. THERMODYNAMICS OF HYDROGEN AND HELIUM PLASMAS UNDER SHOCK AND ISENTROPIC COMPRESSION AT MEGABAR PRESSURE

– **Gryaznov V.** – *IPCP RAS, Russia,*

23 November- 17.00 - 18.00

Poster contributions

24 November - 9.30 - 13.00 (*lanch break 13.00-14.00*)

Numerical simulation of non-ideal plasmas

1. NUMERICAL EXPERIMENT FOR the IMPACT IGNITION in the INERTIAL THERMONUCLEAR FUSION

– **Demchenko** V.V. – *MФТИ, Russia*

2. FIRST-PRINCIPLES CALCULATIONS OF PHYSICAL PROPERTIES OF CONDENSED SYSTEMS AT HIGH PRESSURES

– **Magnitskaya** M.V., Maksimov E., Kulatov E.T., Lepeshkin S.V., N.L. Matsko, Yu.A. Uspenskii, – *Prokhorov Institute, RAS / Lebedev Institute, RAS, Moscow, MIPT, IHPP RAS*

3. COMPRESSION ISENTROPE OF DEUTERIUM BY QUANTUM MOLECULAR DYNAMICS

– **Levashov** P.R. Chentsov A. V., – *JIHT RAS, Russia*

4. "DIELECTRIC CATASTROPHE" AND INSULATOR-CONDUCTOR TRANSITION

– **Khrapak** A. G., Apfelbaum E.M. – *JIHT RAS, Russia*

5. SIMULATION of ABSORPTION of FEMTOSECOND LASER PULSES in SOLID-DENSITY COPPER

– **Loboda** P.A., N.A. Smirnov, A.A. Shadrin, N.G. Karlyhanov – *RFNC-VNIITF, Snezhinsk, Russia*

6. ATOMISTIC SIMULATION OF LASER ABLATION OF METALS

– **Starikov** S.V., Norman G.E., Stegailov V.V – *JIHT RAS, Russia*

Theoretical studies of non-ideal plasmas

7. DISSOCIOATION AND MELTING IN HYDROGEN AT MEGABAR PRESSURE

– **Vorob'ev** V.S., Novikov V., Khomkin A., Shumikhin A. – *JIHT RAS, Russia*

8. METALLIZATION OF AN ATOMIC GAS AND THE VAPOR-LIQUID TRANSITION IN ALKALI METALS VAPOR

– Khomkin A., Shumikhin A. – *JIHT RAS, Russia*

9. ULTRACOLD NONEQUILIBRIUM PLASMA IN A UNIFORM MAGNETIC FIELD

– **Khikhlukha** D.R. A.A. Bobrov, S.J. Bronin, B.B. Zelener, B.V. Zelener, E.A. Manykin – *JIHT RAS, Russia Research Center "Kurchatovskij Institute"*

10. RECOMBINATION IN STRONGLY COUPLED ION PLASMA AFTERGLOW OF GAS DISCHARGE

– **Lankin** A.V., Amirov R., Norman G. – *JIHT RAS, Russia*

11. ROLE OF THE QUASI-BOUND AND CONTINUUM STATES IN THE THERMODYNAMIC PROPERTIES OF NON-IDEAL MOLECULAR GASES AT ELEVATED TEMPERATURE. CLASSICAL AND QUANTUM APPROACH

– **Stolyarov** A., Surzhikov S. – *Moscow State University, Ishlinskiy Institute RAS*

24 November - 14.00 - 17.00

Dusty plasmas investigations

12. DUSTY PLASMA UNDER MICROGRAVITY CONDITIONS: RESULTS OF EXPERIMENTS ON THE INTERNATIONAL SPACE STATION

– **Molotkov** V.I., A.M. Lipaev, V.N. Naumkin, O.F. Petrov, V.E. Fortov, G.E. Morfill, H.M. Thomas, A.V. Ivlev, S.A. Khrapak, M.A. Schwabe, O.V. Kotov, A.A. Skvortsov, S.A. Volkov, M.S. Kudashkina, A.Yu. Kaleri, A.I. Ivanov – *JIHT RAS, Russia / Max-Planck-Institut, Germany / Gagarin Cosmonaut Center / Korolev Rocket-Space corporation / Central Institute of Machine Building, Korolev, Russia*

13. THE RUSSIAN-EUROPEAN SPACE EXPERIMENT "PLASMA CRYSTAL – 4 COLUMBUS" – OBJECTIVES AND STATUS OF WORKS

– **Usachev** A.D., A.V. Zobnin, O.F. Petrov, V.E. Fortov, B.M. Anaratonne, M. H. Thoma, H. Höfner, M. Kretschmer, M. Fink, G.E. Morfill – *JIHT RAS, Russia, / Max-Planck-Institut, Germany*

14. ON DYNAMICS OF DUST PARTICLES NEAR AN ELECTRIC PROBE IN GLOW DISCHARGE PLASMA

– **Ussenov** Y.A, Dosbolayev M.K., Bastykova N.Kh., Kodanova S.K., Ramazanov T.S.
– *IETP, Al-Farabi Kazakh National University, Almaty, Kazakhstan*

15. BIOLOGICAL ACTIVITY AND THERAPEUTIC EFFECT OF OF LOW INTENSITY OPTICAL PLASMA RADIATION

– **Plavsky** V.Yu. (*Republic of Belarus*)

16. IMPACT OF NONIDEALITY AND DISSIPATION ON THERMAL CONDUCTIVITY OF DUST IN PLASMA

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

17. FORMATION OF DENSE DUST STRUCTURES AND STRUCTURAL PHASE TRANSITIONS IN CRYOGENIC PLASMA IN NEON

– **Polyakov** D.N., V.V. Shumova, L.M. Vasilyak – *JIHT RAS, Russia,*

18. NITRIC OXIDE PLASMA SOURCES FOR BIO-DECONTAMINATION AND PLASMA THERAPY

– **Vasilets** V.N. – *JIHT RAS, Russia,*

19. NUMERICAL SIMULATION OF A DUSTY CLOUD IN THE NEON GLOW DISCHARGE STRATUM

– **Zobnin** A.V., Bukharin M.A., Usachev A.D., Petrov O.F. – *JIHT RAS, Russia,*

20. THE HEATING OF DUST PARTICLES MOTION IN GAS DISCHARGE PLASMA

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

24 November - 17.00 - 18.00

– **Chronicle and perspectives. General discussion.**

– **Closure**

Poster contributions (23 November - 17.00 - 18.00 // 24 November - 10.00 - 17.00)

Dusty plasmas investigations

1. NANOCATALYSIS

– **Smirnov** B.M., Berry R.S.– *JIHT RAS, // Chicago*

2. NEW POSSIBILITIES OF CRYOGENIC ENVIRONMENT IN DUSTY PLASMA STRUCTURE FORMATION

– **Antipov** S.N., M.M. Vasiliev, O.F. Petrov – *JIHT RAS, MIPT*

3. DUST STRUCTURES IN PLASMAS WITH HIGH ANISOTROPY OF THE ION VELOCITY DISTRIBUTION

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

4. DUST PARTICLE SHIELDING WITHIN THE NONLOCAL CHARGING MODEL

– **Derbenev** I.N., A.V. Filippov. – *Troitsk Institute for Innovation and Fusion Research, Russia*

5. THE CONDITIONS OF FORMATION OF MONO- AND MULTILAYER DUSTY STRUCTURES IN PLASMA OF RF-DISCHARGE

– **Vasilieva** E.V., Vaulina O.S., Petrov O.F. – *JIHT RAS,*

6. ON THE THERMAL FORCE ACTING ON DUST GRAIN IN FULLY IONIZED PLASMA

– **Stepanenko** A.A., R.D. Smirnov, V.M. Zhdanov, and S.I. Krasheninnikov – *MEPhI, Uni-California*

7. EXPERIMENTAL INVESTIGATION OF DYNAMICS OF DUST PARTICLES IN A CORONA DISCHARGE

– **Vasilyak L.M.**, Vladimirov V.I., Deputatova L.V., Naumkin V.N. Pecherkin V.Ya – *JIHT RAS*

8. DINAMIC DUST PARTICLE CONFINEMENT IN CORONA DISCHARGE PLASMA

– **Lapitsky D.S.**, Filinov V., Deputatova, Vasilyak L.M., V.I.Vladimirov, O.A.Sinkevich – *JIHT RAS*

9. EXPERIMENTAL INVESTIGATION OF THE ACTION OF A MAGNETIC FIELD ON DUST PLASMA STRUCTURES IN A GLOW DISCHARGE DEPENDING ON THE DISCHARGE PARAMETERS

– **Tasbayev Zh.Zh.**, Dosbolayev M.K., Ramazanov T.S., D'yachkov L.G.
– *IETP, Al-Farabi Kazakh National University*

Traditional Non-Ideal Plasmas

10. CALCULATIONS OF SATURATION PRESSURE OF AL AND FE VAPOR FROM TRIPLE TO CRITICAL POINT

– **Vorob'ev V.S.** – *JIHT RAS*

11. NONEQUILIBRIUM RADIATION THE PULSED DISCHARGE IN WATER TO VISIBLE RANGE AND IT DEPENDENCE FROM ELECTRIC FIELD STRENGTH

– **Fedorovich O.A.** – *Institute for Nuclear Research of NASU, Kiev,*

12. EXPERIMENTAL DECAY COEFFICIENT AND THE LIFETIME CHARGED PARTICLES TO BE COMPARED WITH CALCULATION

– **Fedorovich O.A.**, Voitenko L.M.. – *Institute for Nuclear Research of NASU, Kiev*

13. FORMATION OF THE CORONA AND DENSE CORE IN THE DISCHARGE CHANNEL IN THE ELECTRIC EXPLOSION OF WIRES

– **Tkachenko S.I.**, Zhakhovsky V.V., Shelkovenko T.A., Pikuz S.A – *JIHT RAS*

14. PECULIARITIES OF THE NON-IDEAL PLASMA GENERATION UNDER THE IMPACT OF THE ELECTROMAGNETIC PULSE WITH THE SUB-NANOSECOND RISE ON MICROCONDUCTORS

– **Volkov N.B.**, S.V. Barahvostov, M.B. Bochkarev, , K.A. Nagayev., V.P. Tarakanov, *,**S.I. Tkachenko, E.A. Chingina
– *Inst.of Electrophysics UB RAS, JIHT RAS*

15. RADIATIVE PROPERTIES OF PLASMAS WITH HIGH ENERGY DENSITY

– **Orlov N.** Denisov O. – *JIHT RAS*

16. SIMULATIONS OF NONIDEAL PLASMAS BY THE METHOD OF MOLECULAR DYNAMICS WITH WAVE PACKET SPLITTING

– **Morozov I.V.**, Valuev I.A. – *JIHT RAS*

17. EXPERIMENTAL EVIDENCE OF THE FIRST ORDER METAL-TO-NONMETAL PHASE TRANSITION WITH 5 GPa CRITICAL PRESSURE IN FLUID IRON

– **Rakhel A.D.** Korobenko V.N. – *JIHT RAS*

18. ABNORMAL PRESSURE FLUCTUATIONS AND THERMODYNAMIC INSTABILITIES IN NONIDEAL PLASMA

– **Saitov I.M.**, Lankin AV., Norman G E. – *JIHT RAS*

19. THERMODYNAMIC PROPERTIES OF BINARY COULOMB CRYSTALS

– **Kozhberov A.A.** and D.A. Baiko – *Ioffe In-t, S-Pb., Russia*

20. DIFFUSION IN IONIC LIQUIDS. CLASSICAL MOLECULAR DYNAMIC STUDY

– **Ivanovsky G.E.** Stegailov V.V – *JIHT RAS*

21. THE IMPROVED RAIZER METHOD FOR PLASMA COMPOSITION CALCULATIONS

– **Burakov M.V.**, Kalitkin N.N., Kozlitin I.A. – *Keldysh Institute of Applied Mathematics, Moscow*

22. COMPISITION AND THERMOCYNAMICS OF NON-IDEAL ALKALI PLASMA

– **Gabdullin M.T.**, Ramazanov T.S. – *IETP, Al-Farabi Kazakh National University*

23. CALCULATIONS OF PHASE TRANSITION PARAMETERS IN FULLY IONIZED PLASMAS

– **Zilevich A.I.**, Iosilevskiy I.L. – *MIPT, JIHT RAS*

24. THEORETICAL ESTIMATIONS FOR CRITICAL POINT PARAMETERS IN SiO₂

– **Solov'ev A.M.** Iosilevskiy I.L. – *MIPT, JIHT RAS*

25. WARM DENSE MATTER GENERATION AND DD SYNTHESIS AT VACUUM DISCHARGE WITH DEUTERIUM-LOADED Pd ANODE

– **Kurilenkov Yu.K.**, Tarakanov V.P., Guskov S.Yu. – *JIHT RAS*

26. AB-INITIO CALCULATIONS OF THE THERMAL CONDUCTIVITY OF METALS WITH HOT ELECTRONS

– **Zhilyaev P. A.**, **Stegailov V.V.** – *JIHT RAS*

27. EXPERIMENTAL DETERMINATION OF DESTRUCTION TIME FOR POLYMETHYLMETHACRYLATE AND POLYSTYRENE BEHIND THE SHOCK FRONT INITIATED BY HIGH-CURRENT ELECTRON BEAM PULSE

– **Kalinin Yu.G.**, B.A. Demidov, V.P. Efremov, , V.A. Petrov, S.I. Tkachenko, K.V. Chukbar
– *JIHT RAS, Kurchatov Institute, Russia*
