

PROGRAM

Scientific-Coordination Session on "Non-Ideal Plasma Physics" (December 3-4, 2013, Presidium RAS, Leninskiy avenue, 32a, Moscow) Chair - academician Vladimir Fortov

December 3 2013

9:30 Fortov V.E. - Opening Talk

Fundamental problems of physics of strongly-coupled plasma

1. 9:45-10:00 **Shpatakovskaya Galina Vasilievna** (KIAM RAS, Moscow, Russia) *Inclusion of the electron spectrum discreteness in the statistical model of free ions*
2. 10:00-10:15 **Lozovik Yuri Efremovich** (ISAN, Troisk, Moscow, RU) *Ultracold rydberg matter: strongly correlated phases*
3. 10:15-10:30 **Reinholz Heidi Ella** (University of Rostock, Rostock, Germany) *Dynamical conductivity in warm dense matter*
4. 10:30-10:45 **Knyazev Dmitry Vladimirovich** (JIHT RAS, Moscow, Russia), Levashov P.R. *Ab initio calculation of transport and optical properties of dense strongly coupled metal plasma*
5. 10:45-11:00 **Starostin A.N.** (SRC RF TRINITI, Troitsk, Russia), Gryaznov V.K., Lomonosov I.V., Petrushevich Y.V. *Modeling of fusion reactions in nonideal plasmas*
6. 11:00-11:15 **Minakov Dmitry Vladimirovich** (JIHT RAS, Moscow, Russia), Levashov P.R. *Melting curves of metals by ab-initio calculations at wide range of pressures*
7. 11:15-11:30 **Larkin Alexander Sergeevich** (JIHT RAS, Moscow, Russia), Filinov V.S. *Energy spectrum calculation for systems in wigner's representation of quantum mechanics.*

Physics of phase transitions in strongly-coupled plasma

8. 11:30-11:50 **Iosilevskiy Igor L'vovich** (JIHT RAS, Moscow, Russia) *Enthalpic and entropic phase transitions in high energy density matter*
9. 11:50-12:05 **Vorob'ev Vladimir Sergeevich** (JIHT RAS, Moscow, Russia), Grushin A.S., Novikov V.G. *Average atom model application to the study of phase transitions in cesium at high pressures*
10. 12:05-12:20 **Yakub Eugene Solomonovich** (ONEU, Odessa, UA) *Melting line of highly compressed molecular hydrogen*

11. 12:20-12:35 **Butlitsky M. B.** (JIHT RAS, Moscow, Russia), Zelener B. V., Zelener B. B.
Vapor-liquid critical point for cut-off coulomb non-ideal plasma model
12. 12:35-13:00 **Combined presentation**
Shumikhin Aleksey Sergeevich (JIHT RAS, Moscow, Russia), Khomkin A.L.
Critical points of metal vapors

Khomkin Alexander L'vovich (JIHT RAS, Moscow, Russia), Shumikhin A.S.
Dissociative phase transition features in dense hydrogen and deuterium and anomalous on hugoniot curve and isentrope

13:00-14:00 **LUNCH**

Experimental investigations of strongly-coupled plasma

13. 14:00-14:15 **Blikov Anton Olegovich** (RFNC-VNIIEF, Sarov, Russia), Mochalov M.A., Il'kayev R.I., Mikhaylov A.L., Ogorodnikov V.A., *Investigation of quasi-isentropic compressibility of deuterium and helium at the pressures of 1500-5000~GPa*
14. 14:15-14:30 **Zhernokletov Michael Vasil'evich** (RFNC-VNIIEF, Sarov, Russia), Novikov M.G. *Shock compression of nitrogen in megabar pressure range*
15. 14:30-14:45 **Rakhel Anatoly Dmitrievich** (JIHT RAS, Moscow, Russia), Korobenko V.N., *Direct measurements of thermodynamic functions and specific electrical resistivity of fluid tungsten over a wide range of densities*
16. 14:45-15:00 **Inogamov Nail Alimovich** (ITP RAS, Chernogolovka, Russia), Anisimov S.I., Khokhlov V.A., Migdal K.P., Petrov Yu.V., Zhakhovsky V.V., Agranat M.B., Ashitkov S.I., Faenov A.Ya., Khishchenko K.V. *Ultrashort laser-matter interaction at moderate intensities: two-temperature relaxation, generation of superelastic shocks, foaming of stretched melt, and freezing of evolving nanostructures.*
17. 15:00-15:15 **Orlov Nikolay Yurievich** (JIHT RAS, Moscow, Russia), Denisov O.B., Vergunova G.A., Rosmej O.N. *Theoretical and experimental studies of radiative and gas dynamic properties of substances at high energy density in matter.*
18. 15:15-15:30 **Molodets Alexander Mikhailovich** (IPCP RAS, Chernogolovka, Russia), Golyshev A.A., Emelyanov A.N. *Conductivity jump of shocked amorphous carbon*

Physics of extreme states of matter and astrophysics

19. 15:30-15:45 **Popov Sergei Borisovich** (SAI MSU, Moscow, RU), Postnov K.A. *Millisecond extragalactic radio bursts as magnetar flares*

20. 15:45-16:00 **Chugunov Andrey Igorevich** (Ioffe Institute, St. Petersburg, RU), Gusakov M.E., Kantor E.M. *Instability windows and evolution of rapidly rotating neutron stars*
21. 16:00-16:15 **Gryaznov Viktor Konstantinovich** (IPCP RAS, Chernogolovka, Russia), Iosilevskiy I.L. *Thermodynamics of hydrogen and helium at megabar pressures*

Numerical and theoretical investigations of strongly-coupled plasma

22. 16:15-16:30 **Dyachkov Sergey Aleksandrovich** (JIHT RAS, Moscow, Russia), Levashov P.R. *Methods for calculating the shell correction in the thomas-fermi model*
23. 16:30-16:45 **Dumin Yurii Viktorovich** (MSU, Moscow, Russia), Akhmet'ev P.M. *New method for calculation of the coulomb sums in strongly-coupled plasmas*
24. 16:45-17:00 **Volkov Nikolay Borisovich** (IEP UB RAS, Ekaterinburg, Russia), Barakhvostov S.V., Muzyukin I.L., Nagayev K.A., Turmyshev I.S., Tarakanov V.P. *Investigation of nonlinear dynamics of non-ideal plasma of metals. The energy spectrum of the picosecond electron beam*

December 4 2013

10:00-17:00 **Poster Session**

Numerical and theoretical investigations of strongly-coupled plasma

25. 9:30-09:45 **Veysman Mikhail Efimovich** (JIHT RAS, Moscow, Russia), Nersisyan H.B., Andreev N.E., Matevosyan H.H. *Wide-range model of plasma permittivity with account for electron-electron collisions*
26. 09:45-10:00 **Khrapak Alexey Georgievich** (JIHT RAS, Moscow, Russia), Khrapak S.A. *Thermodynamics of debue systems in weakly and moderately coupled regimes*
27. 10:00-10:15 **Fedorovich Oleg Antonovich** (KINR NASU, Kyiv, UA), Voitenko L.M. *On the influence of factors on decay of a dense plasma ionization, photo-and three-body recombination of an electron in the ground state of the atom*
28. 10:15-10:40 **Combined presentation**
Norman Genri Edgarovich (JIHT RAS, Moscow, Russia), Lankin A.V. *Ion recombination in dense plasma. I. The suppression due nonideality*
Lankin Alexander Valerievich (JIHT RAS, Moscow, Russia) *Ion recombination in a dense plasma. II. The suppression due to solvation*
29. 10:40-11:05 **Combined presentation**
Saitov Ilnur Minnigazievich (JIHT RAS, Moscow, Russia), Lankin A.V., Norman

G.E., *Reflectivity from dense xenon plasma flat surface. I. Density of electron states*

Stegailov Vladimir Vladimirovich (JIHT RAS, Moscow, Russia), Lankin A.V., Norman G.E., Saitov I.M., Zhilyaev P.A. *Reflectivity from dense xenon plasma flat surface. II. Ab initio calculation*

30. 11:05-11:20 **Ivanovskis G.** (JIHT RAS, Moscow, Russia) *Features of particle dynamics at the microscopic level leading to anomalous diffusion in the ionic liquid. a molecular dynamics study.*
31. 11:20-11:35 **Smirnov B.M** (JIHT RAS, Moscow, Russia), Afanas'ev V.P., Zhilyaev D.A. *Capillary discharge of low pressure for medicine.*
32. 11:35-11:50 **Maierov Sergey Alekseevich** (GPI RAS, Moscow, Russia) *The evolution of ultracold Coulomb plasma*

11:50-13:00 **LUNCH**

Investigations of dusty plasma

33. 13:00-13:15 **Lipaev A.M.** (JIHT RAS, Moscow, Russia), Molotkov V.I., Naumkin V.N. *Space experiment "plasma crystal": results of investigations and new problems*
34. 13:15-13:30 **Zhukhovitskii Dmitry Igorevich** (JIHT RAS, Moscow, Russia), Molotkov V.I., Lipaev A.M., Naumkin V.N., Thomas H.M., Ivlev A.V., Morfill G.E. *Cavity deformation upon subsonic motion of a projectile in a fluid complex plasma*
35. 13:30-13:45 **Lisina Irina Igorevna** (JIHT RAS, Moscow, Russia), Vaulina O.S. *Influence of interparticle interaction anisotropy on structural and kinetic properties of the dust system in plasma*
36. 13:45-14:00 **Karasev Viktor Yurevich** (SPbSU, Saint-Petersburg, RU), Ermolenko M.A., Pavlov S.I. *Selection of dust particles in the self-organized dust structures*
37. 14:00-14:15 **Filippov Anatoly Vasilievich** (SRC RF TRINITI, Troitsk, Russia), Cherkovets V.E., Pal A.F., Rerikh V.K., Smirnov V.P., Starostin A.N., Taran M.D. *Study of a dusty plasma of a radioisotope photovoltaic battery*
38. 14:15-14:30 **Serov Alexander Olegovich** (MSU, SINP, Moscow, Russia), Ekimov E.A., Filippov A.V., Ivanov A.S., Pal A.F., Petrov O.F., Ryabinkin A.N., Starostin A.N. *Coating the micron-sized particles by metals in dusty plasma for disperse composition material preparation*
39. 14:30-14:45 **Nekrasov Andrey Alexandrovich** (SRC RF TRINITI, Troitsk, Russia), Andrianov Yu.V., Babichev V.N., Pal A.F., Petrushevich Yu.V., Sarkarov N.E., Starostin A.N., Filippov A.V., Cherkovets V.E. *Generation of highly charged*

dense dust plasma under exposure of a dense dust layer to the radiation of argon fluoride laser

40. 14:45-15:00 **Dyachkov Lev Gavriilovich** (JIHT RAS, Moscow, Russia) *Analytical model of coulomb clusters in a cylindrically symmetric harmonic trap*
41. 15:00-15:15 **Bystryi Roman Grigorovich** (JIHT RAS, Moscow, Russia), Morozov I.V. *Electron dynamics in non-ideal clusters plasma*

15:15-17:00 Chronicles of Scientific Events and Discussion. Closing Ceremony

Poster Presentations

1. **Boriev I.A.** *Fundamental laws of classic and quantum physics as consequence of materialistic insight into the properties of microwave background radiation*
2. **Ponizovskiy A.Z., Gosteev S.G., Filippov S.N.** *Investigation a nonequilibrium plasma of nanosecond streamer corona in air flow by high frequency pulses*
3. **Kozhberov A. A., Baiko D. A.** *Properties of coulomb crystals with isotopic impurities.*
4. **Vaulina O.S., Koss X.G.** *Mass-transfer in equilibrium correlated systems: the transition from the ballistic to the diffusive mode*
5. **Baiko D.A.** *Thermodynamic properties of plasma crystals*
6. **Kostenko O.F., Andreev N.E.** *Modeling of characteristic x-rays generation under vacuum heating of hot electrons by a femtosecond laser pulse*
7. **Shumova V.V., Polyakov D.N., Vasilyak L.M.** *Study of the effect of metastable atoms in interaction of neon plasma with dust particles*
8. **Golyshev A.A., Molodets A.M.** *Thermo-physical properties of gallium melt at high pressures*
9. **Pinchuk M.E., Bogomaz A.A., Budin A.V., Rutberg Ph.G.** *Nearelectrode channel structure in high-current discharge in high-pressure gas*
10. **Vaulina O.S., Vasilieva E.V.** *The influence of conditions of formation of topological defects on processes of mass transfer in two-dimensional systems*
11. **Myasnikov M.I., D'yachkov L.G., Vasiliev M.M., Petrov O.F.** *Coulomb clusters of dust particles in anisotropic parabolic traps*
12. **Tikhonov V.N., Ivanov I.A., Kriukov A.E., Tikhonov A.V.** *Low-cost microwave generators for plasma torches*
13. **Antipov S.N., Vasiliev M.M., Maiorov S.A., Petrov O.F.** *Non-equilibrium dust structures in cryogenic gas discharges*