

PROGRAM

Scientific-Coordination Session on "Non-Ideal Plasma Physics"

November 26-27, 2025

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10:00 Oleg F. Petrov. Introductory words

Thermodynamic properties and equation of state of non-ideal plasmas

1. 10:20 - 10:40 **Shpatakovskaya G.V.** (KIAM RAS, Moscow) *On the quasi-classical thermodynamics of electrons in plasma*
2. 10:40 - 11:00 **Zhukhovitskii D.I.** (MIPT, Dolgoprudny), Perevoshchikov E.E. *Thermodynamic limit of the Coulomb system in the model of a bounded one-component plasma*
3. 11:00 - 11:20 **Khrapak S. A.** (JIHT RAS, Moscow), Khrapak A. G. *Interpolation model for heat capacity of dense liquids: Explaining generalized Rosenfeld-Tarazona scaling*
4. 11:20 - 11:40 **Molodets A.M.** (FRC PCP MC RAS, Chernogolovka), Golyshev A.A., Kim V.V. *Saturation of electrical resistivity in vanadium at high shock pressures*
5. 11:40 - 12:00 **Khishchenko K.V.** (JIHT RAS, Moscow) *Equation of state for europium in a wide range of variation of specific volume and internal energy*
6. 12:00 - 12:20 **Seredkin N.N.** (JIHT RAS, Moscow), Khishchenko K.V. *Equations of state for mixtures of cesium iodide, cesium bromide and water at high energy densities in strong shock waves*
7. 12:20 - 12:40 **Boyarskikh K.A.** (JIHT RAS, Moscow), Khishchenko K.V. *Thermodynamic properties of dense bismuth plasma in shock-compression and isentropic-expansion processes*
8. 12:40 - 13:00 **Obruchkova L.R.** (JIHT RAS, Moscow), Boyarskikh K.A., Seredkin N.N., Khishchenko K.V. *An equation of state for iron plasma under conditions of shock-wave loading of solid and porous samples*
9. 13:00 - 14:00 **LUNCH**

Ab initio methods for simulation of non-ideal plasmas

1. 14:00 - 14:20 **Demyanov G.S.** (MIPT, Dolgoprudny), Levashov P.R. *Classical Molecular Dynamics of an Ideal Fermi Gas for Calculating Thermodynamic Properties*
2. 14:20 - 14:40 **Onegin A.S.** (JIHT RAS, Moscow), Demyanov G.S., Levashov P.R. *Limitations of Classical Molecular Dynamics with Quantum Pseudopotentials: The Role of the Pauli Exclusion Principle*
3. 14:40 - 15:00 **Shapiyeva A.Ye.** (IITU, Almaty), Kunakov S.K. *Monte Carlo simulation of fission fragments and electrons energy spectra formation in $^{235}\text{UF}_6$ gas, irradiated by external neutron flux*

Transport and optical properties of non-ideal plasmas

1. 15:00 - 15:20 **Zaporozhets Yu.B.** (FRC PCP MC RAS, Chernogolovka), Mintsev V.B., Gryaznov B.K. *Experimental investigation of optical-polarization properties of shock-compressed krypton plasma*

2. 15:20 - 15:40 **Kulish M.I.** (FRC PCP MC RAS, Chernogolovka), Dudin S.V., Mintsev V.B. *Measurement of microparticles number density in a high-velocity aluminum jet by Mie scattering*
3. 15:40 - 16:00 **Dumin Yu.V.** (MSU, Moscow) *On the possibility of "metal--insulator" Mott transition in the ultracold plasmas*
4. 16:00 - 16:20 **Tashkenbayev Y.A.** (KAZNU, IETP , Almaty), Shalenov E.O., Dzhumagulova K.N. *Electron Scattering Properties in Dense Quantum Plasma of Neon*
5. 16:20 - 16:40 **Fairushin I.I.** (KFU, Kazan), Mokshin A.V. *Calculation of the sound attenuation coefficient of strongly coupled Yukawa plasmas within the weak decaying collective-excitation approximation*

17:00-18:00. Overview of Poster Presentations (3-minute presentations)

November 27, 2025

Thermodynamic properties and equation of state of non-ideal plasmas

1. 10:00 - 10:25 **Iosilevskiy I.L.** (JIHT RAS, Moscow), Gryaznov V.K., Shutov A.V. *Anomalous Thermodynamics Regions (ATR) in Hot Dense Nonideal Matter*

Non-ideal plasma in astrophysical applications

1. 10:25 - 10:45 **Zemlyakov N.A.** (Ioffe Institute, Saint-Petersburg), Chugunov A.I. *Elasticity of the neutron star mantle: the "spaghetti" phase*
2. 10:45 - 11:05 **Kunakov S.K.** (SDU, Almaty), Shapiyeva A.Ye. *The Nature of Fission*
3. 11:05 - 11:25 **Baiko D. A.** (Ioffe Institute, Saint-Petersburg) *Short-range ordering in crystallized mixtures of atomic nuclei and phase diagram of C/O mixture*
4. 11:25 - 11:45 **Chugunov A.I.** (Ioffe Institute, Saint-Petersburg) *Plastic deformation as an additional heating source in transiently accreting neutron stars*

Generation and diagnostics of non-ideal plasmas

1. 11:45 - 12:05 **Myrzali M.A.** (KAZNU, Almaty), Shalenov E.O., Dzhumagulova K.N., Seitkozhanov Y.S., Masheyeva R.U., Jumagulov M.N. *Positron Production Processes in Non-Maxwellian Fusion Plasmas*
2. 12:05 - 12:25 **Kurilenkov Yu.K.** (JIHT RAS, Moscow), Oginov A.V., Andreev S.N., Gus'kov S.Yu., Samoylov I.S. *Current status of the study of aneutronic proton--boron fusion in a nanosecond vacuum discharge*

Applications of plasma in biology and medicine

1. 12:25 - 12:45 **Kharlamov V.A.** (NRC KI, Moscow), Vasileva N.A., Medzhidov I.M., Tikhonov A.V., Ivanov I.A., Tikhonov V.N. *The effect of non-thermal plasma on spores of phytopathogenic fungi using *Penicillium* spp. as a model*
2. 12:45 - 14:00 **LUNCH**

Physics of dusty and colloidal plasmas

1. 14:00 - 14:20 **D'yachkov L.G.** (JIHT RAS, Moscow), Dzlieva E.S., Novikov L.A., Gasilov M.A., Pavlov S.I., Karasev V.Yu. *Rotation of individual dust particles in plasma around their own axis*

2. 14:20 - 14:40 **Filippov A.V.** (SRC RF TRINITY, Troitsk), Trushkin N.I., Vysotskii D.V. *Theory of dust particle charging in multicomponent humid air plasmas*
3. 14:40 - 15:00 **Dobroklonskaya M.S.** (JIHT RAS, Moscow), Vasilyak L.M., Pecherkin V.Ya., Vladimirov V.I. *Control of trajectories and confinement of charged microparticles in a quadrupole trap with rectangular voltage*
4. 15:00 - 15:20 **Martynova I.A.** (JIHT RAS, Moscow), Iosilevskiy I.L. *Macroion screening features in highly asymmetric complex plasmas as a result of taking microions correlations into account*
5. 15:20 - 15:40 **Kolotinskii D.A.** (MIPT, Dolgoprudny), Lisin E.A., Syrovatka R.A., Timofeev A.V., Voronov I.V. *Self-sustained rotational dynamics of a dust particle pair in a plasma flow*
6. 15:40 - 16:00 **Voronov I. V.** (MIPT, Dolgoprudny), Timofeev A. V. *Radial profile of the stress tensor in a dusty plasma monolayer*
7. 16:00 - 16:20 **Tiubaev D. D.** (MIPT, Dolgoprudny), Nikolaev V. S., Timofeev A. V. *Structure and dynamics of dusty plasma in the range 9-150 K: analysis of experimental data*

16:20-18:00. Chronicle. Closing Ceremony

Poster Section

1. **Galtsov I. S.** (MIPT, Dolgoprudny), Minakov D. V., Levashov P.R. *Resistivity of Pd: s - and d - contributions from *ab initio* calculations and Wannier formalism*
2. **Zamorin D. A.** (MIPT, Dolgoprudny), Kononov E. A., Lisina I. I., Lisin E. A., Sametov E. A., Vasiliev M. M., Petrov O. F. *Inertial and inertialess 3D-dynamics of an active Brownian particle in plasma*
3. **Kuznetsov S.V.** (JIHT RAS, Moscow) *Ion-acoustic solitons in the kinetic description of the electron component of collisionless nonisothermal plasma*
4. **Senoshenko R.V.** (MIPT, Dolgoprudny), Trukhachev F.M., Kononov E.A., Vasiliev M.M., Petrov O.F. *Wave processes in the system of synthesized active Brownian particles*
5. **Karasev V.Yu.** (SPbSU, Saint-Petersburg), Dзлиева E.S., Novikov L.A., Yanitsin D.V., Gasilov M.A., Pavlov S.I. *Geometry of sections and the arrangement of dust particles therein in a longitudinal magnetic field*
6. **Pavlov S.I.** (SPbSU, Saint-Petersburg), Dзлиева E.S., Gasilov M.A., Morozova M.B., Novikov L.A., Karasev V.Yu. *Levitation of dust particles trapped in the narrowing area of the current channel*
7. **Perevoshchikov E.E.** (MIPT, Dolgoprudny), Zhukhovitskii D.I. *Cluster superheating during nonisothermal nucleation.*
8. **Shalenov E.O.** (SU, Almaty), Seisembayeva M.M., Nuraly A.T., Seitkozhanov Ye.S., Dzhumagulova K.N. *Shifts of Lyman and Balmer lines and excitation cross sections in dense plasma*
9. **Larkin A.S.** (JIHT RAS, Moscow), Filinov V.D., Levashov P.R. *Studying Wang-Landau algorithm for calculating density of states of classical systems with continuous spectrum*
10. **Shapiyeva A.Ye.** (IITU, Almaty), Kunakov S.K. *Fissile plasma gas dynamics*