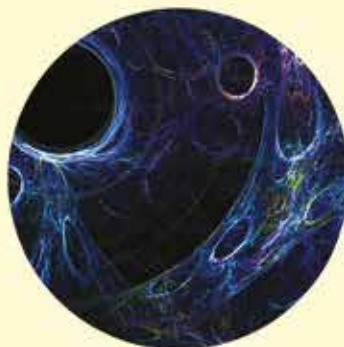
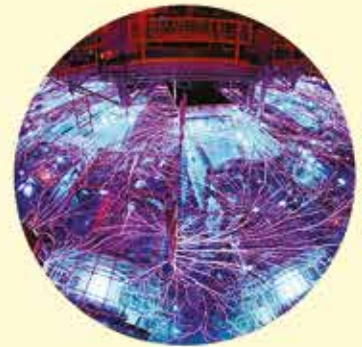
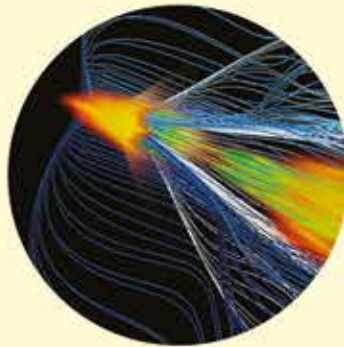
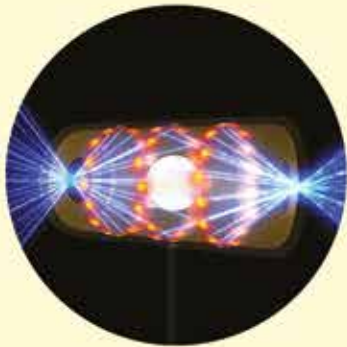
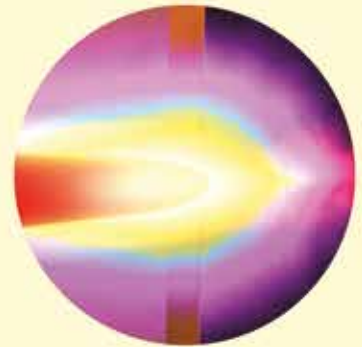
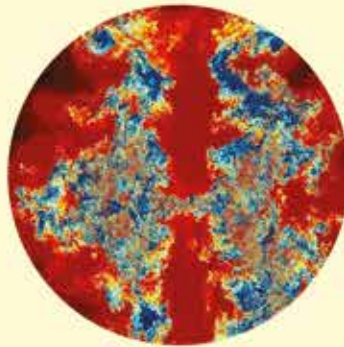
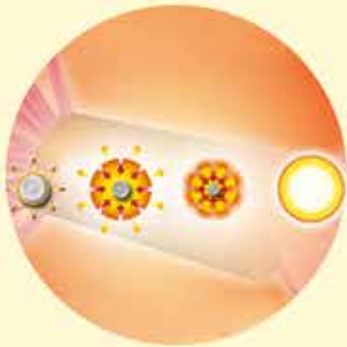




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Book of Abstracts



CONTROL OF FUEL TARGET IMPLOSION NON-UNIFORMITY IN HEAVY ION INERTIAL FUSION.....	66
T. Iinuma, T. Karino, S. Kondo, T. Kubo, H. Kato, T. Suzuki, S. Kawata, A. I. Ogoyski	
DECAY $B \rightarrow \phi l^+ l^-$ IN COVARIANT QUARK MODEL.....	67
A.N. Issadykov	
CALCULATION OF ION STRUCTURE FACTORS IN WARM DENSE MATTER.....	68
M.K. Issanova, T.S. Ramazanov, S.K. Kodanova, C.-V. Meister, D.H.H. Hoffmann	
IMPROVED THE PROPERTIES OF LASER-PRODUCED PLASMA IONS USING MULTICHANNEL LASER BEAMS.....	69
R. T. Khaydarov, H. B. Beisinbaeva, R. R. Khaydarov, F. R. Tojinazarov, G. R. Berdiyrov, I. Rakhmatullaev	
DYNAMIC ESTIMATION OF EMITTANCE GROWTH WITH TUNE DEPRESSION AND NONLINEAR FIELD ENERGY FACTOR DURING LONGITUDINAL BUNCH COMPRESSION FOR HEAVY ION INERTIAL FUSION DRIVER.....	70
T. Kikuchi, K. Horioka	
DYNAMICAL PROPERTIES OF INERTIAL CONFINEMENT FUSION PLASMAS.....	71
S. K. Kodanova, T. S. Ramazanov, M. K. Issanova	
RESEARCHES ON REACTOR CORE IN HEAVY ION INERTIAL FUSION.....	72
S. Kondo, T. Karino, T. Iinuma, H. Kato, T. Kubo, S. Kawata, A. I. Ogoyski	
THERMAL STABILITY OF COLOR CENTERS IN LIF CRYSTALS: DEPENDENCE ON RADIATION TYPE AND DOSE.....	73
V.M. Lisitsyn, Zh.T. Karipbayev, L.A. Lisitsyna, A.K. Dauletbekova, A.T. Akilbekov, M.V. Zdorovets	
CONTRIBUTION OF ELECTRONIC EXCITATION AND NUCLEAR MECHANISMS IN ION INDUCED HARDENING OF LIF CRYSTALS.....	74
I.Manika, J. Maniks, A. Dauletbekova, R. Zabels, R. Grants, M. Baizhumanov, M. Zdorovets, L. Suleyeva	
PRESSURE OF PARTIALLY IONIZED NON-DEGENERATE HYDROGEN PLASMAS.....	75
Z. Mazhit	
CORRELATION FUNCTIONS OF ONE-COMPONENT PLASMAS.....	76
Z. Mazhit	
EFFECT OF SWIFT HEAVY IONS IRRADIATION ON SINX MATRIX WITH SI NANODEFFECTS.....	77
D. Murzalinov, F. Komarov, L. Vlasukova, A. Akilbekov, A. Dauletbekova, M. Zdorovets	
CONTROL OF LASER-DRIVEN ION ACCELERATION.....	78
K. Nakazato, Y. Ootake, S. Kawata, X. F. Li, Y. J. Gu, Q. Kong, P. X. Wang, Q. Yu	
ALPHA CLUSTER RESONANCE STRUCTURE OF LIGHT NUCLEI CLOSE TO COULOMB BARRIER.....	79
D. K. Nauruzbayev, A. K. Nurmukhanbetova, N. A. Mynbayev, M. S. Golovkov, G. V. Rogachev, A. V. Tikhonov, M. V. Koloberdin, I. A. Ivanov, V. Z. Goldberg	
NUMERICAL MODELING OF MAGNETIC FIELD DYNAMICS IN TOKAMAK TAKING INTO ACCOUNT THE INDUCED EDDY CURRENTS.....	80
A. D. Sadykov, G. V. Shapovalov, B. Zh. Chektybaev	

Calculation of ion structure factors in warm dense matter

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Recently, the interest in the study of various properties of warm dense matter, i.e. matter with kinetic energies of more than $0.2 eV$ and particle densities of more than $10^{25} m^{-3}$, strongly increased. Under such conditions, the transport coefficients of plasmas are strongly influenced by the ion distribution, i.e. by the ion-ion structure factor. The larger the ratio of the ion-ion potential energy to the ion kinetic energy Γ , the stronger the effect. On the other hand, it is believed that hypernetted chain (HNC) approximations and the mean spherical (MS) approximation are applicable for systems with large Γ . Thus, in the present work, electrical and heat conductivities of warm dense matter are calculated within Born approximation neglecting the ion-ion structure factor and considering it. For the ion-ion structure factor values are taken into account, which were observed in experiments or are calculated using HNC or MS approximations. It is found that the values of the electrical and heat

conductivities in plasmas at solid state density, calculated considering the ion-ion structure factor, are about 20 times larger than the values obtained neglecting the structure factor.

References

- [1] V.S. Karakhtanov, R. Redmer, H. Reinholz, G. Ropke. 2011 *Contrib. Plasma Phys.* **51**, 355-360.
- [2] C.-V. Meister, G. Ropke. 1982 *Annalen der Physik* **39**, 133-148.
- [3] C.-V. Meister, M. Imran, D.H.H. Hoffmann. 2011 *Laser and Particle Beams* **29**, 17-27.
- [4] T. S. Ramazanov, S.K. Kodanova, Zh. A. Moldabekov, and M. K. Issanova. 2013 *Phys. Plasmas*, **20**, 112702.
- [5] T. S. Ramazanov, Zh. A. Moldabekov, and M. T. Gabdullin. 2015 *Phys. Rev. E.*, **92**, 023104
- [6] S. K. Kodanova, T. S. Ramazanov, M. K. Issanova, G. N. Nigmatova, and Zh. A. Moldabekov. 2015 *Contrib. Plasma Phys.* **55**, 271
- [7] M.K. Issanova, S.K. Kodanova, T.S. Ramazanov, and D.H.H. Hoffmann. 2016 *Contrib. Plasma Phys.* **56**, No. 3-4, DOI 10.1002/ctpp.201500134