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PUBLICATIONS

Intense, High-Quality Ion Beams Generated by Ultra-Intense Lasers

M. Roth, T.E. Cowan, J.-C. Gauthier, J. Meyer-ter-Vehn, M. Allen, P. Audebert, A. Blazevic, E. Brambrink, J. Fuchs, M. Geissel, M. Hegelich, S. Karsch, A. Pukhov, H. Ruhl, T. Schlegel

AIP Conf. Proceedings: 14th Int. Conference on High Power Beams and 5th Int. Conference on Dense Z-Pinches, Albuquerque, NM, 2002, AIP Conference Proceedings, 650p. 485-490 (2003)

Strongly Coupled Laser Produced Plasmas: Investigation of Hollow Ion Formation and Line shape Analysis

F. Rosmej, A. Calisti, R. Stamm, B. Talin, C. Moss, S. Ferri, M. Geissel, D.H.H. Hoffmann, A. Faenov, T. Pikuz

Journal of Quantitative Spectroscopy & Radiative Transfer 81, 395-409 (2003)

High Power Production Target Calculations for a Fast Extraction Scheme

N.A. Tahir, M. Winkler, J. Kojouharova, P. Roussel-Chomaz, V. Chisikin, H. Geissel, D.H.H. Hoffmann, B. Kindler, F. Landre-Pellmoine, B. Lommel, W. Mittig, G. Münzenberg, A. Shutov, H. Weick, M. Yavor

Nucl. Instr. Meth. B204, 282, (2003)

Influence of the Equation of State on the Compression and Heating of Hydrogen

N.A. Tahir, H. Juranek, A. Shutov, R. Redmer, A.R. Piriz, M. Temporal, D. Varentsov, S. Udrea, D.H.H. Hoffmann, C. Deutsch, I. Lomonosov, V.E. Fortov

Phys. Rev. B 67, 184101(1-7) (2003)

Influence of the Equation of State of Matter and Ion Beam Characteristics on Target Heating and Compression

N.A. Tahir, A. Shutov, D. Varentsov, P. Spiller, S. Udrea, D.H.H. Hoffmann, I.V. Lomonosov, J. Wieser, M. Kirk, R. Piriz, V.E. Fortov, R. Bock

Phys. Rev. Spec. Top. 6, 020101, 1 (2003)

The Creation of Strongly Coupled Plasmas Using an Intense Heavy Ion Beam: Low-Entropy Compression of Hydrogen and the Problem of Hydrogen Metallization

N. A. Tahir, A.R. Piriz, A. Shutov, D. Varentsov, S. Udrea, D.H.H. Hoffmann, H. Juranek, R. Redmer, R.F. Portugues, I. Lomonosov, V.E. Fortov

J. Phys.A.: Math. Gen. 36, 6129 (2003)

Intense Heavy Ion Beams as a Tool to Induce High-Energy-Density States in Matter

N.A. Tahir, C. Deutsch, V.E. Fortov, V. Gryaznov, D.H.H. Hoffmann, H. Juranek, I.V. Lomonosov, A.R. Piriz, R. Redmer, A. Shutov, P. Spiller, M. Temporal, S. Udrea, D. Varentsov

Contribu. Plasma Phys. 43, 373 (2003)

Generation of Hollow Ion Beam: Calculation of the Rotation Frequency Required to Accommodate Symmetry Constraints

A.R. Piriz, N.A. Tahir, D.H.H. Hoffmann, M. Temporal

Phys. Rev. E 67, 017501 (2003)

Symmetry Analysis of Cylindrical Implosions Driven by a High-Frequency Rotating Intense Heavy Ion Beam

A.R. Piriz, M. Temporal, J.J. Lopez Cela, N.A. Tahir, D.H.H. Hoffmann
Plasma Phys. Controlled Fusion 45, 1733 (2003)

Fundamental Studies of Intense Heavy-ion-beam Interaction with Solid Targets

E. Dewald, C. Constantin, C. Niemann, S. Udrea, J. Jacoby, J. Wieser, D. Varentsov, N.A. Tahir, A. Kozyreva, A. Shutov, T. Schlegel, A. Tauschwitz, D.H.H. Hoffmann, R. Bock
IEEE Trans. Plasma Sc. 31, 221 (2003)

Solid Neon for Equation of State Studies

D. Varentsov, N.A. Tahir, I.V. Lomonosov, D.H.H. Hoffmann, J. Wieser, V.E. Fortov
Energy Loss Dynamics of an Intense Uranium Beam Interacting with
Europhys. Lett. 61, 57 (2003)

Effect of the Target Density on the Cross Section of Charge Exchange between fast Ions and Atoms

O. Rosmej, I.Yu. Tolstichina, V.P. Shevelko
JTP Vol. 48, N9, 1110 (2003)

Gas Density Measurements with Heavy Ion Beams

S. Neff, A. Tauschwitz, C. Niemann, D. Penache, D.H.H. Hoffmann, S.S. Yu, W. M. Sharp,
J. Appl. Phys., 93, 3079 (2003)

Laser-guided, Intersecting Discharge Channels for the Final Transport in Heavy-ion Fusion

C. Niemann, S. Neff, A. Tauschwitz, D. Penache, R. Birkner, C. Constantin, R. Knobloch,
R. Presura, F.B. Rosmej, D.H.H. Hoffmann, S.S. Yu,
J. Appl. Phys., 93, 9470 (2003)

Diagnostics of Discharge Channels for Neutralized Chamber Transport in Heavy Ion Fusion

C. Niemann, D. Penache, A. Tauschwitz, F.B. Rosmej, S. Neff, R. Birkner, C. Constantin, R. Knobloch, R. Presura, S.S. Yu, W.M. Sharp, D.M. Ponce, D.H.H. Hoffmann,
Laser and Particle Beams 21, 13 (2003)

Visible Light Spectroscopy of Ar^{6+} Ions in High Rydberg States Produced with a Micro-capillary Target

Y. Morischita, Y. Kanai, K. Ando, R. Hutton, T. Brage, H.A. Tori, K. Komaki, Y. Yama-zaki,
H. Masuda, K. Ishii, F.B. Rosmej
Nucl. Instr. Meth. B 205, 758 (2003)

Gravitational Lensing by the Sun of Non Relativistic Penetrating Particles

D.H.H. Hoffmann, J. Jacoby, and K. Zioutas
Astropart. Phys. 20, 73 (2003)

Research into the Advanced Experimental Methods for Precision Ion Stopping Range Measurements in Matter

I. Bakhmetjev, A. Fertman, A. Golubev, A. Kantsyrev, B. Sharkov, V. Turtikov, V. Kunin, V. Vatulin, N. Zhidkov, E. Baldina, U. Neuner, J. Wieser, J. Jacoby, D.H.H. Hoffmann
Laser and Particle Beams 21, 1 (2003)

Numerical Study of K-alpha Emission from Partially Ionized Chlorine

T. Kawamura, T. Schlegel, H. Nishimura, K. Koike, Y. Ochi, R. Matsui, S. Okihara, S. Sakabe, T. Johzaki, H. Nagatomo, K. Mima, I. Uschmann, E. Foster, D.H.H. Hoffmann
Journal of Quantitative Spectroscopy & Radiative Transfer 81, 237 (2003)

The Frankfurt Funneling Experiment

J. Thibus, I. Mueller, N. Mueller, A. Schempp, H. Zimmermann
Proc. PAC 2003, IEEE03CH37423, Piscataway, Vol. 4, pp. 2823-2825 (2003)

High Current Ion Beam RF Acceleration and Perspectives for an Inertial Fusion Driver

U. Ratzinger, H. Liebermann, O. Meusel, H. Podlech, R. Tiede, W. Barth, W. Vinzenz
Laser and Particle Beams 21(4), 621 (2003)

Energy Loss of Ions in a Magnetized Plasma: Conformity between Linear Response and Binary Collision Treatments

H. B. Nersisyan, G. Zwicknagel, C. Toepffer,
Phys. Rev. E 67 (026411), 1 (2003)

Ion Stopping in a Magnetized Anisotropic Electron Plasma

B. Möllers, C. Toepffer, M. Walter, G. Zwicknagel
Nucl. Instr. Meth. in Phys. Res. B 205, 285 (2003)

Scaling Law for Recombination in Electron Coolers

C. Heerlein, G. Zwicknagel, C. Toepffer,
Nucl. Instr. Meth. in Phys. Res. B 205, 395 (2003)

Drag Force on Ions in Magnetized Electron Plasmas

B. Möllers, M. Walter, G. Zwicknagel, C. Carli, C. Toepffer
Nucl. Instr. Meth. in Phys. Res. B 207, 462 (2003)

Wave Packet Molecular Dynamics Simulations of Warm Dense Hydrogen

M. Knaup, P.-G. Reinhard, C. Toepffer, G. Zwicknagel
J. Phys. A: Math. Gen. 36, 6165 (2003)

Recombination Enhancement in Electron Coolers

C. Heerlein, C. Toepffer
Hyperfine Interactions 146/147, 19 (2003)

Signatures of Chaos in Channeling Radiation Spectra

M. Weber, C. Toepffer, H. Genz, P. Hoffmann-Stascheck, A. Richter, C. Rangacharyulu, J.P.F. Sellshop
Proc. Symp. Channeling - Bent Crystals - Radiation Processes, 85 (2003)

Interpolation Formula for the Electrical Conductivity of Nonideal Plasmas

A. Esser, R. Redmer, G. Röpke
Contrib. Plasma Phys. 43, 33 (2003)

Scattering Processes and Electrical Conductivity of Partially Ionized Hydrogen Plasma
T.S. Ramazanov, K.Zh. Galiyev, D.N. Dzhumagulova, G. Röpke, R. Redmer
Contrib. Plasma Phys. 43, 39 (2003)

Electrical Conductivity in Dense Aluminum Fluid
S. Kuhlbrodt, R. Redmer
J. Phys. A: Math. Gen. 36, 6027 (2003)

Transport Properties of Partially Ionized Hydrogen Plasma
T.S. Ramazanov, K.Zh. Galiyev, D.N. Dzhumagulova, G. Röpke, R. Redmer
J. Phys. A: Math. Gen. 36, 6173 (2003)

Equation of State for Hydrogen in the Chemical Picture: Possible Application in Astrophysics
H. Juranek, V. Schwarz, R. Redmer
J. Phys. A: Math. Gen. 36, 6181 (2003)

Equation of State and Electrical Conductivity of Dense Fluid Hydrogen and Helium
R. Redmer, H. Juranek, S. Kuhlbrodt, V. Schwarz
Z. Phys. Chem. 217, 783 (2003)

Equation of State for Dense Plasmas
S. Kuhlbrodt, H. Juranek, V. Schwarz, R. Redmer
Contrib. Plasma Phys. 43, 342 (2003)

CONFERENCE CONTRIBUTIONS

Hamburg, Germany: Research Courses on New X-Ray Sciences at HASYLAB/DESY, March 5-7, 2003

R. Redmer
Warm Dense Matter in Astrophysics: Giant Planets

Valencia, Spain: 11th International Workshop on the Physics of Non-ideal Plasmas (PNP11), March 20-25, 2003

D.H.H. Hoffmann
High Intensity Particle and Laser Beams Interacting with Ionized Matter

D. Varentsov
Intense Heavy Ion Beams for Experimental Investigation of High Energy Density Matter

P. Mulser, M. Kanapathipillai
Giant Enhancement of Collisional Absorption in Extended Cluster Media

G. Zwicknagel, M. Knaup, P.-G. Reinhard and C. Toepffer
Wave Packet Molecular Dynamics Simulations of Warm Dense Hydrogen

G. Zwicknagel and T. Pschiwul
Dynamic Response of Two-Component Model Plasma

R. Redmer, H. Juranek, S. Kuhlbrodt, V. Schwarz
EOS and Conductivity in Warm Dense Matter

Portland, USA, 2003 Particle Accelerator Conference, May 12-16, 2003

J. Thibus, I. Mueller, N. Mueller, A. Schempp, H. Zimmermann
The Frankfurt Funneling Experiment

Yamanashi, Japan: COOL 03, Int. Workshop on Beam Cooling and Related Topics, May 19-23, 2003

C. Toepffer, B. Moellers, M. Walter, G. Zwicknagel
Cooling of Ions and Antiprotons with Magnetized Electrons

Rostock, Germany: Workshop on the Dynamical Conductivity in Strongly Coupled Plasmas, June 13, 2003

G. Zwicknagel, T. Pschiwul, B. Jakob
MD-simulations of the Conductivity of Model Plasmas

Lyon, France: CECAM Workshop on Quantum Molecular Dynamics, June 30 – July 2, 2003

R. Redmer
Behaviour of Dense Hydrogen

St.-Petersburg, Russia: 30th EPS Conference on Controlled Fusion and Plasma Physics, July 7-11, 2003

D. Varentsov
Experimental Investigation of High Energy Density Matter by Intense Heavy Ion Beams

O. Rosmej
X-ray Projectile and Target Radiation for Investigation of Ion Stopping Process

Varenna, Italy, Int. Conference on Ultrashort High Energy Radiation and Matter, September 7-10, 2003

M. Roth
X-Ray and Particle Diagnostics for Warm Dense Matter Research

Monterey, Ca, USA, Int. Conf. on Inertial Science and Fusion Applications, September 8-12, 2003

D.H.H. Hoffmann
High Energy Density Physics with Intense Ion and Laser Beams at GSI

Parma, Italy: LXXXIX Congresso Nazionale della Societa` Italiana di Fisica, September 17-22, 2003

P. Mulser, M. Kanapathipillai
Giant Enhancement of Collisional Absorption in Extended Cluster Media

Copenhagen, Denmark: Workshop on Phase Transitions in Nuclear Collisions (PT03), October 9-10, 2003

D. Varentsov
Intense Heavy Ion Beams as a Tool to Study Warm Dense Matter

Greifswald, Germany: WE-Heraeus-Ferientschule zur Plasmaphysik, October 6-17, 2003

R. Redmer
Stark korrelierte Plasmen
Plasmen in großen Planeten

Gyeongju, Korea: IX International Conference on Accelerator and Large Physics Control System (ICALPECS), October 13-17, 2003

H. Brand, D. Beck, E. Gaul, W. Geithner, T. Kühl, K. Poppensieker, M. Roth, U. Thiemer
The PHELIX Control System Based on UML Design Level Programming in LabView

Wien, Austria: IAEA Coordinated Research Projects, November 4–7, 2003

D.H.H. Hoffmann
Basic Physics for Inertial Fusion Energy - Present and Future Prospects of High Energy Density in Matter Research at GSI

DIPLOMA AND PHD-THESES

A. Kozyreva

Creation of High Energy Density in Matter with Heavy Ion Beams for Equation of State Studies

PhD-Thesis, TU Darmstadt, December 2003

M. Kanapathipillai

Erhöhte Laserabsorption in ausgedehnten Clustermedien

PhD-Thesis, TU Darmstadt, December 2003

M. Walter

Dielektrische lineare Antworttheorie magnetisierter Elektronenplasmen

PhD-Thesis, Universität Erlangen, February 2003

J. Marten

Einfluss von Mikrofeldern auf Strahlungsübergänge in Plasmen

PhD-Thesis, Universität Erlangen, May 2003

A. Kietzmann

Molekulardynamiksimulationen dichter Fluide

Diploma-Thesis, Universität Rostock, July 2003

V. Schwarz

Thermodynamik von Wasserstoff-Helium-Gemischen und Modellierung von großen Planeten

Diploma-Thesis, Universität Rostock, August 2003

S. Kuhlbrodt

Transporteigenschaften dichter Plasmen

PhD-Thesis, Universität Rostock, April 2003