

# **43<sup>rd</sup> International Workshop on High-Energy-Density Physics with Intense Ion and Laser Beams**

**January 29<sup>th</sup> - February 4<sup>th</sup>, 2023**

**Darmstädter Haus (Waldemar Petersen Haus)**

**Hirschegg, Austria**



**P r o g r a m**

## Monday (January 30<sup>th</sup>)

Start	Duration	Speaker	Title
<b>Session 1: NIF Ignition &amp; FAIR (Chair: Dominik Kraus)</b>			
8:30	00:10	KRAUS/BAGNOUD	Opening
08:40	00:30	DIVOL, Laurent	Dynamics and Variability in Near Unity Gain Inertial Confinement Fusion Implosions on the National Ignition Facility (+ ignition!)
09:10	00:30	GIUBELLINO, Paolo	Status FAIR/GSI ( <i>via Zoom</i> )
09:40	00:20	MAJOR, Zsuzsanna	Latest Advances at the PHELIX Facility at GSI and New Platform for Warm Dense Matter Experiments
<b>10:00</b>	<b>00:30</b>	<b>Coffee break</b>	
<b>Session 2: HED Facilities I (Chair: Matt Zepf)</b>			
10:30	00:30	ZASTRAU, Ulf	High Energy Density Science at the European XFEL: Combining Bright X-rays, Tiny Diamonds and Intense Lasers
11:00	00:30	CONDAMINE, Florian	High-Energy Density Laser Matter Interaction at ELI Beamlines
11:30	00:20	KARSCH, Stefan	Towards Stable Multi-GeV Laser-Wakefield Operation on PW Lasers
11:50	00:20	EHRET, Michael	Advances in High-Repetition-Rate Metrology of Laser-Driven Ion Beams and Electromagnetic Pulses at the CLPU for IMPULSE
<b>12:10</b>		<b>Lunch break</b>	
<b>Session 3: Planetary Interiors (Chair: Jan Vorberger)</b>			
17:00	00:20	STEVENSON, Michael	Chemistry of Light Element Mixtures at Icy Giant Conditions
17:20	00:20	GERICKE, Dirk	Dynamics of Diamond Nucleation and Growth in High-Pressure Hydrocarbons
17:40	00:20	PREISING, Martin	Material Properties of Matter in Saturn's Interior from Ab Initio Simulations
18:00	00:20	TAHIR, Naeem A.	Production of Diamonds at the Facility for Antiprotons and Ion Research Using Intense Heavy Ion Beams
18:20	00:20	PIRIZ, A. Roberto	Effects of Curvature and Convergence on the Rayleigh-Taylor Instability in the Cylindrical Implosion of an Elastic-Plastic Shell
<b>19:00</b>		<b>Dinner</b>	
<b>20:30</b>		<b>HED@FAIR Executive Meeting</b>	

## Tuesday (January 31<sup>st</sup>)

Start	Duration	Speaker	Title
<b>Session 4: HED Facilities II (Chair: Florian Condamine)</b>			
08:30	00:20	HESELBACH, Philipp	First Combined Laser-Driven X-ray Diagnostics and Heavy-Ion Heated Matter Experiments at the HHT station of GSI
08:50	00:20	LÜTGERT, Julian	Towards a Temperature and Graphitization Measurement of Ion-heated Diamond Samples with X-ray Diagnostics
09:10	00:20	BELIKOV, Roman	Ultra-Fast Temperature Measurements for Heavy-Ion Heating
09:30	00:30	GLENZER, Siegfried	The Scientific Opportunities of the Matter in Extreme Conditions Upgrade Project at SLAC National Accelerator Laboratory
<b>10:00</b>	<b>00:30</b>	<b>Coffee break</b>	
<b>Session 5: HED Theory (Chair: Dirk Gericke)</b>			
10:30	00:20	ROEPKE, Gerd	Thermodynamic and Transport Properties of Plasmas: Low-Density Benchmarks
10:50	00:20	DORNHEIM, Tobias	Accurate Temperature Diagnostics for Matter under Extreme Conditions
11:10	00:20	SCHÖRNER, Maximilian	X-ray Thomson Scattering Spectra from DFT-MD Simulations Based on a Modified Chihara Formula
11:30	00:20	VORBERGER, Jan	Nonlinear and Higher Order Terms in Warm Dense Matter
11:50	00:20	RETHFELD, Bärbel	Optical Properties of Laser-Excited Noble Metals
<b>12:20</b>		<b>Lunch break</b>	
<b>Session 6: Laser Technology and IFE (Chair: Laurent Divol)</b>			
17:00	00:20	RUHL, Hartmut	Low Q fusion with the help of efficient physics, lasers with high power density, and nano-technology
17:20	00:20	BAGNOUD, Vincent	Can one Pump High-Energy Lasers with LED?
17:40	00:20	ZÄHTER, Sero	Measurement and Control of Laser Plasma Instabilities at $2\omega$ for Direct Drive Inertial Confinement Fusion
18:00	00:20	BRÖNNER, Matthias	Combining the Radiation-Hydrodynamics code MULT-IFE with the Particle-Swarm-Optimization Technique to Study Compression Schemes for Proton Fast Ignition
18:20	00:20	MALKI, Marcus	Frequency Doubling of Incoherent Laser Pulses for Inertial Fusion Experiments
18:40	00:20	ROTH, Markus	Proton Fast Ignition as a Commercial Approach to Fusion Energy
<b>19:15</b>		<b>Dinner</b>	
<b>20:30</b>			<b>IFE Round Table (via Zoom)</b>

## Wednesday (February 1<sup>st</sup>)

Start	Duration	Speaker	Title
<b>Session 7: Laser-Ion Acceleration (Chair: Sophia Malko)</b>			
08:30	00:30	METZKES-NG, Josefine	High Energy Proton Acceleration at DRACO-PW and Radiobiological Applications
09:00	00:20	WEISER, Maximilian	Update on the Laser-Driven Heavy Ion Acceleration at CALA
09:20	00:20	GERLACH, Sonja	Particle Bunch Monitoring at High Repetition Rates Using Ionoacoustics
09:40	00:20	RAMAKRISHNA, Bhuvanesh	Observation of Kilotesla Magnetic Fields in Laser Solid Interaction via Proton Acceleration ( <i>via Zoom</i> )
<b>10:00</b>	<b>00:30</b>	<b>Coffee break</b>	
<b>Session 8: Ultrafast Secondary Sources (Chair: Zsuzsanna Major)</b>			
10:30	00:30	KETTLE, Bredan	Ultrafast X-Ray Absorption Spectroscopy for HED Science Using Laser-Plasma Accelerators
11:00	00:20	PUKHOV, Alexander	Electron Acceleration in Near Critical Density Plasmas
11:20	00:20	ROSMEJ, Olga	New Results on Application of Low Density Polymer Aerogels for Multidisciplinary Research with High Energy Relativistic Laser Pulses
11:40	00:20	ZEPF, Matt	Testing Strong Field QED in Intense Laser Fields
12:00	00:20	ZHENG, Chuan	First Measurement of Helium-3 Ion-Beam Polarization after Laser-Plasma Acceleration
<b>12:20</b>		<b>Lunch break</b>	
<b>17:00</b>	<b>1:30</b>	<b>Poster Session</b>	
<b>18:40</b>	<b>00:20</b>	<b>Conference Board Meeting</b>	
<b>20:00</b>		<b>Conference Dinner at Birkenhöhe</b>	

## Thursday (February 2<sup>nd</sup>)

Start	Duration	Speaker	Title
<b>Session 9: Ultrafast Plasma Dynamics (Chair: Tobias Dornheim)</b>			
08:30	00:30	HUANG, Lingen	Probing Electron Transport in Relativistic Solid Density Plasmas at European XFEL
09:00	00:20	KLUGE, Thomas	Visualizing Ultrafast Kinetic Instabilities in Laser-Driven Solids Using X-ray Scattering
09:20	00:20	WEGERT, Leonard	Measurement of Equation-of-State Isentropes by High-Resolution X-Ray Imaging of Isochorically Heated Wire Targets
09:40	00:20	MARRE, Brian Edward	Atomic Population Kinetics for ParticleInCell
<b>10:00</b>	<b>00:30</b>	<b>Coffee break</b>	
<b>Session 10: Ion Stopping in Plasmas (Chair: Dieter H. H. Hoffmann)</b>			
10:30	00:20	ZHAO, Yongtao	Proton-Boron Nuclear Reactions Initiated by Laser-Accelerated Intense Proton Beam in Boron Plasma ( <i>via Zoom</i> )
10:50	00:20	REN, Jieru	Target Density Effects on Charge Transfer of Laser-Accelerated Carbon Ions in Dense Plasma ( <i>via Zoom</i> )
11:10	00:30	MALKO, Sophia	Proton Stopping Power Measurements in Warm Dense Carbon at Low Velocity Projectile Ratio
11:40	00:20	NAZARY, Haress	Towards Stopping Power Experiments with LIGHT
12:00	00:20	RÖDER, Simon	Conditioning the Temporal Contrast Caused by the Stretcher Using the Beam Size
<b>12:20</b>		<b>Lunch break</b>	
<b>Session 11: High Fields and Radiation (Chair: Brendan Kettle)</b>			
17:00	00:20	FREEMAN, Matt	Laser Plasma-Accelerator Driven Electron Radiography ( <i>via Zoom</i> )
17:20	00:20	VALIALSHCHIKOV, Maksim	Towards High Photon Density for Compton Scattering by Spectral Chirp
17:40	00:20	DOYLE, Leonard	Studies on the Photon Background for a Potential Photon-Photon Scattering Experiment
18:00	00:20	HERNANDEZ ACOSTA, Uwe	QED.jl - First-Principal Description of QED-Processes in X-Ray Laser Fields
<b>18:25</b>		<b>Transfer to</b>	<b>Hüttenabend at Sonna-Alp</b>

## Friday (February 3<sup>rd</sup>)

Start	Duration	Speaker	Title
<b>Session 12: Proton &amp; Neutron Radiography (Chair: Thomas Kühl)</b>			
08:30	00:20	SCHANZ, Martin	PRIOR-II - A European High Energy Proton Radiography Facility for HED Physics Applications
08:50	00:20	MARIAM, Fesseha	Achromatic Imaging Using Charged Particle
09:10	00:20	TANG, Zhaowen	The Proton Radiography Capability
09:30	00:20	TANG, Elise	Simulating Proton Radiography
09:50	00:20	ZIMMER, Marc	Demonstration of Non-Destructive Material Characterization at a Laser-Based Neutron Source
<b>10:10</b>	<b>00:30</b>	<b>Coffee break</b>	
<b>Session 13: Implosions and Astrophysical Plasmas (Chair: Dominik Kraus)</b>			
10:40	00:20	SCHUMACHER, Samuel	Towards the First Measurement of the Opacity of Warm Dense Hydrogen Using Radiography
11:00	00:20	MURAKAMI, Masakatsu	Generation of Ultrahigh Magnetic Fields by Vortex-Driven Microtube
11:20	00:20	KRASIK, Yakov	Recent Advances in Research of Underwater Electrical Explosion of Wires and Shock Waves Generation
11:40	00:20	HOFFMANN, Dieter H.H.	Laboratory Observation of C and O Emission Lines of White Dwarf H1504+65-like Atmosphere Model
<b>12:15</b>		KRAUS/BAGNOUD	<b>Conclusion and End of Workshop</b>

## Poster Session (Wednesday, 17:00-18:30)

1	MAY, Philipp	The Equation of State and Diamond Formation Properties of Cellulose Acetate and Poly-L-lactic Acid at Ice Giant Interior Conditions
2	GYRDYMOV, Mikhail	Modified Magnetic Spectrometer and its Application for Measurement of Betatron Radiation
3	SEIPT, Daniel	Spin and Polarization in High-Intensity Laser-Plasma Interactions
4	TAVANA, Parysatis	Record-Breaking Efficiency of Multi-MeV Bremsstrahlung Production in Interaction of Direct Laser Accelerated Electrons with High-Z Converter
5	MARTYENKO, Artem	Temperature Estimations of Warm Dense Matter Based on X-Ray Imaging of the Expansion of a Thin Ti Wire Heated by Laser-Accelerated Relativistic Electrons
6	RANJAN, Divyanshu	Hydrogen Metallisation in Warm Dense Matter Condition
7	QU, Chongbing	Towards Probing K-Shell Ionization of Carbon Under Warm Dense Matter
8	HEUSER, Benjamin	Shock Release Dynamics and Recovery of Nanodiamonds Formed in Laser Compressed Plastics
9	KRASIK, Yakov	Super Luminescence High Power Microwave Pulse Propagation in the Neutral Gas
10	KHADEMI, Pooyan	Background Estimation and Conjugate Homodyne Method as a Detection Scheme for Photon/Photon Scattering in Quantum Vacuum Signal
11	GRIMM, Sarah J.	Interferometer for the Measurement of the Free Electron Density in a Laser-Generated Plasma
12	BOLLER, Pascal	Numerical Optimization of the Target Thickness for Ion Acceleration in the Relativistic Transparency Regime at PHELIX
13	DE LANGE, Stan	Modeling of Laser-Induced Vaporization of Thin Tin Sheets for EUV Lithography Applications
14	KALLA, René	On-Line Detection of Radioactive Fission Isotopes Produced by Laser Driven Gamma Rays
15	HUANG, Xinhe	3-Dimensional Full Characterization of Laser Pulses with Optical Angular Momentum
16	NEFF, Stephan	Experimental Facilities for High-Energy Density and Warm Dense Matter Experiments at FAIR
17	AUMÜLLER, Simone	Roomtemperature Vacuum Chamber with Cryogenic Surfaces for High Intensity Uranium 28+ Beams