Organization Committee

## Sunday, July 24

**3:00 PM** → 6:00 PM **Check-in**

## Monday, July 25

**8:30 AM** → 8:40 AM **Introduction by LOC Chair (Attila Cangi)** 10m

**8:40 AM** → 9:00 AM **Welcome by HZDR Director (Sebastian Schmidt)** 20m

**9:00 AM** → 10:45 AM **Dense and Astrophysical Plasmas: 1 (Chair: Dominik Kraus)**

9:00 AM **Ab Initio Simulations for Warm Dense Matter with Applications in Planetary Physics** 50m
**Speaker**: Burkhard Militzer (University of California, Berkeley, United States)

9:50 AM **Density Functional Theory calculations for high- temperature carbon plasmas** 35m
**Speaker**: Mandy Bethkenhagen (ENS Lyon, France)

10:25 AM **Electronic transport coefficients of hydrogen from density functional theory across the plasma plane** 20m
**Speaker**: Martin French (Institute of Physics, University of Rostock, Rostock, Germany)

**10:45 AM** → 11:15 AM **Coffee Break** 30m

**11:15 AM** → 12:30 PM **Dense and Astrophysical Plasmas: 2 (Chair: David Chapman)**

11:15 AM **Mean Force Kinetic Theory** 35m
**Speaker**: Scott Baalrud (University of Michigan, United States)

11:50 AM **Dynamical formation of the Diamond rain in icy giant planets by C-H immiscibility** 20m
Remote Talk
**Speaker**: Bo Chen (National University of Defense Technology, China)

12:10 PM **Electrical Conductivity of Iron in Earth's Core from Microscopic Ohm's Law** 20m
**Speaker**: Kushal Ramakrishna (CASUS, Helmholtz-Zentrum Dresden-Rossendorf, Germany)

**12:30 PM** → 2:30 PM **Lunch Break** 2h

**2:30 PM** → 4:15 PM **High-Energy-Density Plasmas in the Laboratory: 1 (Chair: Jean Clerouin)**

2:30 PM **Pressure effects on the electronic structure of carbon-hydrogen mixtures in the Mbar to Gbar regime** 50m
**Speaker**: Dominik Kraus (University of Rostock, Germany)

3:20 PM **Spectral line shapes in dense plasmas** 35m
**Speaker**: Evgeny Stambulchik (Weizmann Institute of Science, Israel)

3:55 PM **Sensitivity of uniaxially driven ICF target performance to interfacial conduction in the high-energy-density regime** 20m
**Speaker**: Dave Chapman (First Light Fusion Ltd, Oxford, United Kingdom)

**4:15 PM** → 4:45 PM **Coffee Break** 30m

**4:45 PM** → 6:00 PM **High-Energy-Density Plasmas in the Laboratory: 2 (Chair: Scott Baalrud)**

4:45 PM **Direct imaging of phase transitions in nonequilibrium warm dense matter** 35m
Remote Talk
**Speaker**: Mianzhen Mo (SLAC National Accelerator Laboratory, United States)

5:20 PM **Ion core effect on transport and thermodynamic properties in dense plasmas** 20m
Remote Talk
**Speaker**: Tlekkabul Ramazanov (Al Farabi Kazakh National University, IETP, Kazakhstan)

5:40 PM **Accurate and efficient calculations of mean ionization states with an average-atom model** 20m
**Speaker**: Timothy Callow (CASUS, Helmholtz-Zentrum Dresden-Rossendorf, Germany)

**6:00 PM** → 8:00 PM **Poster Session**

## Tuesday, July 26

**9:00 AM** → 10:45 AM **Confined and Mesoscopic Coulomb Systems: 1 (Chair: Giovanni Vignale)**

9:00 AM **Coulomb effects in electronic transport** 50m
**Speaker**: Boris Narozhny (KIT, Germany)

9:50 AM **Itinerant-electron magnetism: the importance of many-body correlations** 35m
**Speaker**: Saverio Moroni (IOM CNR and SISSA, Trieste, Italy)

10:25 AM **Transport evidence for a sliding two-dimensional quantum electron solid** 20m
**Speaker**: Sergey Kravchenko (Northeastern University, United States)

**10:45 AM** → 11:15 AM **Coffee Break** 30m

**11:15 AM** → 12:30 PM **Confined and Mesoscopic Coulomb Systems: 2 (Chair: David Neilson)**

11:15 AM **Excitonic condensation, pairing gap and quadriexcitons in an electron-hole bilayer with twofold valley degeneracy** 35m
**Speaker**: Stefania De Palo (IOM-CNR, Italy)

11:50 AM **Supersolid state of a dilute exciton gas in electron-hole bilayers** 20m
Remote Talk
**Speaker**: Dmytro Fil (Institute for Single Crystals of National Academy of Sciences of Ukraine, Ukraine)

12:10 PM **Exciton supersolid phase transition in bilayer semiconductors.** 20m
**Speaker**: Sara Conti (University of Antwerp, Belgium)

**12:30 PM** → 2:30 PM **Lunch Break** 2h

**2:30 PM** → 3:30 PM **Dense and Astrophysical Plasmas: 3 (Chair: Mandy Bethkenhagen)**

2:30 PM **Carbon ionization in the hot dense regime** 20m
**Speaker**: Jean Clerouin (CEA/DAM/DIF, Arpajon, France)

2:50 PM **Dynamic Structure Factor of the Magnetized One-Component Plasma: Crossover from Weak to Strong Coupling** 20m
**Speaker**: Hanno Kählert (ITAP, Kiel University, Germany)

3:10 PM **Ab initio simulations for the ion-ion structure factor of warm dense aluminum** 20m
**Speaker**: Maximilian Schörner (Universität Rostock, Germany)

**3:30 PM** → 4:30 PM **High-Energy-Density Plasmas in the Laboratory: 3 (Chair: Burkhard Militzer)**

3:30 PM **Electronic pair alignment and roton feature in the warm dense electron gas** 20m
**Speaker**: Tobias Dornheim (CASUS, Helmholtz-Zentrum Dresden-Rossendorf, Germany)

3:50 PM **Waves in the medium and on the boundary of Quark-Gluon Plasma** 20m
Remote Talk
**Speaker**: Kassymkhan Baiseitov (Al-Farabi Kazakh National University, Kazakhstan)

4:10 PM **Electron–atom interaction in dense plasma of noble gases** 20m
Remote Talk
**Speaker**: Karlygash Dzhumagulova (IETP, al-Farabi Kazakh National University, Kazakhstan)

**4:30 PM** → 5:00 PM **Coffee Break** 30m

**5:00 PM** → 6:00 PM **Confined and Mesoscopic Coulomb Systems: 3 (Chair: Stefania De Palo)**

5:00 PM **Interaction induced topological collective edge excitations in layered structures** 20m
**Speaker**: Abedinpour Harzand Saeed (Institute for Advanced Studies in Basic Sciences (IASBS), Iran)

5:20 PM **High-Tc electron-hole superfluidity and BCS-BEC crossover in double-layer heterostructures** 20m
Remote Talk
**Speaker**: Andrea Perali (School of Pharmacy, Physics Unit, University of Camerino, Italy)

5:40 PM **Anomalous Josephson effect in chiral double layers** 20m
**Speaker**: Klaus Ziegler (Institute of Physics, University Augsburg, Germany)

## Wednesday, July 27

**9:00 AM** → 10:45 AM **Plasmas in Condensed Matter: 1 (Chair: David Neilson)**

9:00 AM **Collective modes in beyond-graphene atomically thin materials** 50m
Remote Talk
**Speaker**: Marco Polini (University of Pisa, Italy)

9:50 AM **Eliashberg theory of superconductivity from electronic collective excitations** 35m
**Speaker**: Giovanni Vignale (University of Missouri, Columbia, United States)

10:25 AM **Ultrafast dynamics of quantum many-body systems including dynamical screening and strong coupling** 20m
**Speaker**: Michael Bonitz (ITAP, Kiel University, Germany)

**10:45 AM** → 11:15 AM **Coffee Break** 30m

**11:15 AM** → 12:30 PM **Plasmas in Condensed Matter: 2 (Chair: Roi Baer)**

11:15 AM **Quantum geometric plasmonics: Berry curvature, quantum metric, and spontaneous collective mode ferromagnetism** 35m
Remote Talk
**Speaker**: Justin Song (Nanyang Technological University, Singapore)

11:50 AM **Collective excitations and quantum incompressibility in electron-hole fluids** 20m
**Speaker**: Gaetano Senatore (Dipartimento di Fisica, Università degli studi di Trieste, Italy)

12:10 PM **Ultrafast Dynamics of Laser-Excited Topological Edge States in Graphene Nanoribbon Heterostructures** 20m
**Speaker**: Jan-Philip Joost (Kiel University, Germany)

**12:30 PM** → 2:30 PM **Lunch Break** 2h

**2:30 PM** → 4:00 PM **Free Discussion Time** 1h 30m

**4:00 PM** → 6:00 PM **Guided City Tours** 2h

**7:00 PM** → 10:00 PM **Conference Dinner** 3h

## Thursday, July 28

**9:00 AM** → 10:45 AM **Classical Charged Systems: 1 (Chair: Hiroo Totsuji)**

9:00 AM **Fast Simulations of Complex Charged Systems for Soft Matter Applications** 50m
**Speaker**: Christian Holm (Institut für Computerphysik, Universität Stuttgart, Germany)

9:50 AM **Investigation of the fluctuation-theorem convergence in a dusty plasma experiment** 35m
Remote Talk
**Speaker**: Yan Feng (Soochow University, China)

10:25 AM **Algebraic infection of charge correlations of a classical electrolyte at the critical point of the liquid-gas transition** 20m
**Speaker**: Angel Alastuey (Laboratoire de Physique, ENS de Lyon and CNRS, France)

**10:45 AM** → 11:15 AM **Coffee Break** 30m

**11:15 AM** → 12:30 PM **Classical Charged Systems: 2 (Chair: Angel Alastuey)**

11:15 AM **Emergent Coulomb Fluids in Spin Ice** 35m
**Speaker**: Peter Holdsworth (ENS Lyon, France)

11:50 AM **Strong Correlation Effects in Atmospheric Pressure Plasmas** 20m
**Speaker**: Marco Acciarri (NERS, University of Michigan, United States)

12:10 PM **Charing of dust particles in space** 20m
Remote Talk
**Speaker**: Ranna Masheyeva (IETP, Al-Farabi Kazakh National University, Almaty, Kazakhstan)

**12:30 PM** → 2:30 PM **Lunch Break** 2h

**2:30 PM** → 3:30 PM **Plasmas in Condensed Matter: 3 (Chair: Gaetano Senatore)**

2:30 PM **Ultradiliute quantum liquid of dipolar atoms in a bilayer** 20m
**Speaker**: Jordi Boronat (Universitat Politecnica de Catalunya, Spain)

2:50 PM **Microfluidic flow in single-layer dusty plasmas** 20m
**Speaker**: Peter Hartmann (Wigner Research Centre for Physics, Hungary)

3:10 PM **Coulomb gas sum rules for vortex-pair fluctuations in 2D superfluids** 20m
Remote Talk
**Speaker**: Gary Williams (University of California, Los Angeles, United States)

**3:30 PM** → 4:30 PM **Classical Charged Systems: 3 (Chair: Gabriel Tellez)**

3:30 PM **Phase separation/diagram of dusty plasmas** 20m
**Speaker**: Hiroo Totsuji (Okayama University, Japan)

3:50 PM **Dynamics of defect filaments in weakly disordered dust acoustic waves of dusty plasmas** 20m
**Speaker**: Lo Wei-Shuo (Department of Physics, National Central University, Taiwan)

4:10 PM **The Conductivity of Concentrated Electrolytes** 20m
Remote Talk
**Speaker**: Yael Avni (Tel Aviv University, Israel)

**4:30 PM** → 5:00 PM **Coffee Break** 30m

**5:00 PM** → 6:00 PM **Developments in Theoretical Methods and Numerical Techniques: 1 (Chair: Tobias Dornheim)**

5:00 PM **Classical Coulomb bridge functions in classical and quantum plasma liquids** 20m
**Speaker**: Panagiotis Tolias (Space and Plasma Physics, KTH Royal Institute of Technology, Sweden)

5:20 PM **Development of a new Quantum Trajectory Molecular Dynamics Framework** 20m
Remote Talk
**Speaker**: Pontus Svensson (University of Oxford, United Kingdom)

5:40 PM **Speeding up X-ray-matter molecular dynamics simulation tool XMDYN with tree algorithms** 20m
**Speaker**: Michal Stransky (European XFEL, Germany)

## Friday, July 29

**9:00 AM** → 10:45 AM **Developments in Theoretical Methods and Numerical Techniques: 2 (Chair: Michael Bonitz)**

9:00 AM **The dynamic nature of high-pressure ice VII and a theory for dynamic phases behind it** 50m
Remote Talk
**Speaker**: Xin-Zheng Li (Peking University, China)

9:50 AM **Stochastic Vector Techniques for Strongly Coupled Coulomb Systems** 35m
**Speaker**: Roi Baer (The Hebrew University, Israel)

10:25 AM **Electronic stopping in warm dense matter using Ehrenfest dynamics and time-dependent density functional theory** 20m
**Speaker**: Alina Kononov (Sandia National Laboratories, United States)

**10:45 AM** → 11:15 AM **Coffee Break** 30m

**11:15 AM** → 12:30 PM **Developments in Theoretical Methods and Numerical Techniques: 3 (Chair: Ronald Redmer)**

11:15 AM **Like-charge attraction in one- and two-dimensional Coulomb systems** 35m
**Speaker**: Gabriel Tellez (Universidad de los Andes, Colombia)

11:50 AM **Thermodynamic and transport properties of plasmas: numerical simulations and benchmarks from analytical theory** 20m
**Speaker**: Gerd Röpke (Institute of Physics, University of Rostock, Germany)

12:10 PM **Analyzing XC functionals for electronic structure calculations at WDM parameters** 20m
**Speaker**: Zhandos Moldabekov (CASUS, Helmholtz-Zentrum Dresden-Rossendorf, Germany)

**12:30 PM** → 2:30 PM **Lunch Break** 2h

**2:30 PM** → 3:45 PM **Machine-Learning Methods for Coulomb Systems: 1 (Chair: Attila Cangi)**

2:30 PM **Deep Quantum Monte Carlo** 35m
Remote Talk
**Speaker**: Frank Noe (FU Berlin, Germany)

3:05 PM **Stochastic Representation of Many-Body Quantum States** 20m
**Speaker**: Guy Cohen (Tel Aviv University, Israel)

3:25 PM **Towards Large-Scale and Spatio-temporally Resolved Diagnosis of Electronic Density of States by Deep Learning** 20m
Remote Talk
**Speaker**: Qiyu Zeng (National University of Defense Technology, China)

**3:45 PM** → 4:15 PM **Coffee Break** 30m

**4:15 PM** → 5:10 PM **Machine-Learning Methods for Coulomb Systems: 2 (Chair: Timothy Callow)**

4:15 PM **FermiFlow: a variational free-energy approach for fermions in the continuum** 35m
Remote Talk
**Speaker**: Lei Wang (Chinese Academy of Sciences, Beijing, China)

4:50 PM **Data-Driven and Physics-Informed Modeling of Matter under Extreme Conditions** 20m
**Speaker**: Attila Cangi (CASUS, Helmholtz-Zentrum Dresden-Rossendorf, Germany)

**5:10 PM** → 5:30 PM **Closing Remarks** 20m