

## Monday, May 23rd

09:45 - 10:00 **Welcome Session**

### Session: New Frontiers

10:00 - 10:30 **A. Zylstra (LLNL)**

*Burning and ignited plasmas at the National Ignition Facility*

10:30 - 10:55 **B. Remington (LLNL)**

*Recent Advances in Relativistic Electron-Positron Pair Production Using High Power Lasers*

10:55 - 11:20 **M. Vranic (IST)**

*Creating and accelerating electron-positron beams with intense laser pulses*

11:20 - 11:50 Break

### Session: Accretion

11:50 - 12:05 **F. Suzuki-Vidal (Imperial)**

*A laser-driven platform to study angular momentum transport in disk-jet transitions*

12:05 - 12:30 **L. Van Box Som (CEA)**

*Megajoule designs relevant to study radiative accretion shocks in magnetic accreting white dwarfs*

12:30 - 12:55 **Poster Flash Presentation**

12:55 - 14:40 Lunch

## Session: Laser-Plasma Interactions

14:40 - 14:55 **J. J. Santos (U. Bordeaux)**

*Investigations of strongly magnetized HED plasmas via laser-driven magnetic flux compression*

14:55 - 15:10 **B. K. Russell (U. Michigan)**

*Extreme magnetic field generation in ultra-intense laser solid interactions*

15:10 - 15:25 **Y. Kuramitsu (Osaka U.)**

*Weibel instabilities with relativistic laser pulses*

15:25 - 15:40 **M. J.-E. Manuel (General Atomics)**

*Early-time Linear-saturation of the Ion-Weibel Instability in Counter-streaming Plasmas of CH, Al, and Cu*

15:40 - 15:55 **R. S. Dorst (UCLA): High Repetition Rate Mapping of the Interaction Between a Laser Plasma and a Magnetized Background Plasma via Laser Induced Fluorescence**

15:55 - 16:25 Break

## Session: Warm Dense Matter

16:25 - 16:50 **M. Gatu Johnson (MIT): Exploring Stellar Nucleosynthesis and Basic Nuclear Science using High Energy Density plasmas at OMEGA and the NIF**

16:50 - 17:15 **S. H. Glenzer (SLAC)**

*X-ray measurements of the equation of state of White Dwarf conditions*

17:15 - 18:45 **Poster Session and Reception**

## Tuesday, May 24th

### Session: Shocks and Turbulence

09:30 - 10:00 **D. Ryu (UNIST)**

*Outstanding issues of intracluster plasma for laboratory astrophysics*

10:00 - 10:25 **W. Yao (E. Polytechnique)**

*Laboratory evidence for proton energization by collisionless shock surfing*

10:25 - 10:50 **D. Caprioli (U. Chicago)**

*The Ubiquity of Diffusive Shock Acceleration*

10:50 - 11:20 Break

### Session: Shocks and Turbulence

11:20 - 11:35 **A. Bohdan (DESY)**

*The electron foreshock at oblique SNR shocks*

11:35 - 11:50 **Y. Sakawa (Osaka U.)**

*Laser-driven collisionless electrostatic shock generation in a multicomponent-ion plasma*

11:50 - 12:15 **B. Reville (MPIK)**

*Proton acceleration in laser driven turbulent plasmas - insights from astrophysics*

12:15 - 12:40 **A. Spitkovsky (Princeton)**

*Particle heating, injection, and acceleration in collisionless shocks: the role of nonlinearities*

12:40 - 14:10 Lunch

## Session: Shocks

14:10 - 14:25 **M. Zakaria (CNRS)**

*Relaxation shocks in variable relativistic jets*

14:25 - 14:40 **P. J. Morris (DESY)**

*Pre-acceleration in the Electron Foreshock: Electron Acoustic Waves*

14:40 - 14:55 **S. V. Lebedev (Imperial)**

*A novel experimental framework for investigating colliding plasma flows with radiative cooling*

14:55 - 15:10 **Q. Moreno-Gelos (ELI-Beamlines)**

*Collision between Radiative and Adiabatic Supersonic Flows*

15:10 - 15:25 **J-H. Ha (UNIST)**

*Electron Preacceleration at Weak Quasi-Perpendicular Shocks in Merging Galaxy Clusters*

15:25 - 15:55 Break

## Session: New Frontiers

15:55 - 16:20 **L. Gremillet (CEA)**

*Advances in the understanding of ultrarelativistic beam-plasma instabilities*

16:20 - 16:45 **A. Frank (U. Rochester)**

*The Dynamics of Colliding Radiative Jets: Experiments and Simulations*

16:45 - 17:00 **V. Horny (CEA)**

*Laboratory demonstration of rapid neutron captures: a quantitative feasibility study*

17:00 - 17:15 **S. Montefiori (MPIK):** *SFQEDtoolkit: a high-performance library for the accurate modelling of strong-field QED effects in relativistic laboratory astrophysics codes*

17:15 - 17:30 **A. Reyes (U. Rochester)**  
*The FLASH code for computational HEDP - recent additions and improvements*

17:30 - 17:45 **K. Fulat (U. Potsdam)**  
*PIC simulations of SNR's shock waves with a turbulent upstream medium*

## Wednesday, May 25th

### Session: Reconnection and Turbulence

09:30 - 10:00 **L. Willingale (U. Michigan)**

*Bow shock formation in a asymmetric relativistic electron driven magnetic reconnection geometry*

10:00 - 10:25 **E. Dal Pino (U. São Paulo)**

*Particle Acceleration by Magnetic Reconnection in Relativistic Jets to Extreme Energies*

10:25 - 10:50 **G. Gregori (Oxford)**

*Transport of Charged Particles through Spatially Intermittent Turbulent Magnetic Fields*

10:50 - 11:20 Break

### Session: Warm Dense Matter, Astrophysics, and Astrophysical Plasmas

11:20 - 11:35 **A. M. Angulo (U. Michigan)**

*Experiments to study KH evolution of filaments feeding starburst galaxies on Omega-EP*

11:35 - 11:50 **F. Soubiran (CEA)**

*Electrical conductivity and optical properties of hydrogen-helium mixtures in giant planet interiors*

11:50 - 12:15 **S. Orlando (INAF)**

*The Progenitor-Supernova-Remnant connection: recent progresses and future prospects*

12:15 - 12:40 **V. V-Villaseca (Imperial)**

*Characterization of quasi-Keplerian, Differentially Rotating, Free-Boundary Laboratory Plasmas*

12:40 - 14:10 Lunch

## Session: Laser-Plasma Interactions and Magnetic Field Generation

14:10 - 14:25 **S. J. Tanaka (Aoyama Gakuin U.)**

*Experimental observation of induced Compton scattering in laser produced plasmas*

14:25 - 14:40 **C. Arran (U. York)**

*Measurement of magnetic dynamics driven by heat flow in a plasma*

14:40 - 14:55 **Z. Gong (MPIK):** *Retrieving self-generated magnetic fields of ultrarelativistic laser plasma via ejected electron polarization*

14:55 - 15:10 **T. Minami (Osaka U.):** *Laser ion acceleration with a large-area suspended graphene target from sub-relativistic to relativistic intensities*

15:10 - 15:25 **H. S. Kumar (Tohoku U.):** *A Coupling Simulation Integrating Molecular Dynamics and Particle-in-Cell Methods for Accurate Intense Laser-Target Simulations*

15:25 - 15:55 Break

## Session: Shocks, Turbulence, Reconnection, and Warm Dense Matter

15:55 - 16:10 **S. Totorica (Princeton)**

*Nonthermal electron and ion acceleration by magnetic reconnection in large laser-driven plasma*

16:10 - 16:25 **B. A. Remington (LLNL)**

*Hydrodynamic instabilities, mixing, and turbulence in high energy density settings*

16:25 - 16:40 **M. Bohme (HZDR):** *Ab initio path integral Monte Carlo simulations of hydrogen snapshots at warm dense matter conditions*

16:40 - 16:55 **A. Vanthieghem (Princeton)**  
*Microturbulence in relativistic blast waves*

16:55 - 17:10 **T. Dornheim (HZDR)**  
*Electronic pair alignment and roton feature in the warm dense electron gas*

19:00 - 20:00 **Visit to the Geographical Society of Lisbon Museum**

20:00 - 22:00 **Conference Dinner at the Geographical Society of Lisbon**  
*Banquet Speaker: Prof. Vitor Cardoso (IST and Niels Bohr Institute)*



## Thursday, May 26th

### Session: Warm Dense Matter

09:30 - 10:00 **A. Ravasio (E. Polytechnique)**

*Electrical conductivity of warm dense silica from double-shock experiments*

10:00 - 10:25 **F. Coppari (LLNL):** *Investigating planetary interior structure with laboratory laser-compression and X-ray diffraction experiments*

10:25 - 10:50 **J. Wicks (Johns Hopkins U.)**

*Direct measurements of temperature and phase transitions along the MgO shock Hugoniot*

10:50 - 11:20 Break

### Session: Warm Dense Matter and New Frontiers

11:20 - 11:35 **J. S. Wark (Oxford)**

*Creating Planetary Interior Conditions via Laser Ablation - A Perspective*

11:35 - 11:50 **Z. Moldabekov (HZDR)**

*Inhomogeneous electron gas under warm dense conditions*

11:50 - 12:15 **A. Araudo (Czech Academy)**

*Jets at all scales: from the non-thermal sky to the laboratory*

12:15 - 12:40 **M. Perucho (U. Valencia)**

*Relativistic Hydrodynamic Simulations of Radio Jets*

12:40 - 14:10 Lunch

14:10 – 18:15 **Excursion/Free Afternoon**

## Friday, May 27<sup>th</sup>

### Session: Shocks

- 09:30 - 10:00 **F. Fiuza (SLAC)**  
*Laboratory observation of electron acceleration in turbulent collisionless shocks*
- 10:00 - 10:25 **D. R. Russell (Imperial)**  
*Perpendicular subcritical shock structure in a collisional plasma experiment*
- 10:25 - 10:50 **A. Levinson (Tel Aviv U.)**  
*The role of plasma instabilities in relativistic radiation-mediated shocks*

10:50 - 11:20 Break

### Session: Reconnection

- 11:20 - 11:35 **L. G. Suttle (Imperial)**  
*Drift velocity measurements and enhanced Thomson scattering in a magnetic reconnection current sheet*
- 11:35 - 12:00 **A. Ciardi (Paris Observatory)**  
*Magnetized laser experiments to study astrophysical plasmas*
- 12:00 - 12:25 **L. Del Zanna (U. Florence)**  
*Mean-field dynamo and fast reconnection mechanisms in relativistic astrophysical plasmas*
- 12:25 - 12:50 **D. B. Schaeffer (Princeton)**  
*Fast Reconnection in Highly-Extended Current Sheets on the NIF*
- 12:50 - 13:10 **Closing and Ph.D. Prizes Announcement**

## Poster Presentations

- #01 **W. Yao (E. Polytechnique)**  
*Laboratory investigation of the interpenetration between two subcritical collisionless shocks*
- #02 **A. Grassi (E. Polytechnique)**  
*Simulations of particle acceleration in collisionless shocks for conditions relevant to NIF experiments*
- #03<sup>+</sup> **D. R. Russell (Imperial)**  
*Radiatively cooled shocks in jets at the MAGPIE pulsed-power facility*
- #04<sup>+</sup> **K. Sakai (Osaka U.)**  
*Local measurements of laser-driven electron-scale magnetic reconnection*
- #05 **K. M. Schoeffler (IST)**  
*Limits on the compression of magnetic islands in strongly radiative magnetic reconnection*
- #06 **L. Gremillet (CEA)**  
*Efficient photon-stimulated scattering of fast electrons in solar flares*

#07

**F. Cruz (IST)**

*Coherent emission from QED cascades in pulsar polar caps*

#08<sup>†</sup>

**V. Tranchant (CEA):** *New Class of Laboratory Astrophysics Experiments: Application to Radiative Accretion Processes Around Neutron Stars*

#09

**F. D. Cruz (IST)**

*Particle-in-cell simulations of laser-driven, ion-scale magnetospheres in laboratory plasmas*

#10<sup>†</sup>

**H. Hasson (U. Rochester)**

*Experimental results from a pulsed-power platform to study accretion-driven astrophysical outflows*

#11

**R. Torres (IST)**

*General relativistic particle-in-cell simulations of compact neutron star magnetospheres*

#12<sup>†</sup>

**E. Figueiredo (IST)**

*Kinetic models in neutron star charge starved vacuum gaps*

#13<sup>†</sup>

**S. Antunes (IST)**

*Time resolved opacity maps of warm dense Ti: a Bayesian search of coupling parameters*

- #14 **L. Hanna (E. Polytechnique)**  
*Experimental stellar opacity and simulation*
- #15 **T. Taguchi (Osaka U.)**  
*Automation of Etch Pit Analyses on Solid-State Nuclear Track Detectors with Machine Learning*
- #16 **S. Egashira (Osaka U.):** *Multidimensional ion radiography with AI individually recognizing multicomponent n-particles on solid state nuclear track detectors*
- #17 **Y. Benkadoum (E. Polytechnique)**  
*Recent results of a laboratory astrophysics experiment performed to study Rayleigh-Taylor instabilities*
- #18<sup>+</sup> **R. Babjak (IST)**  
*Direct laser acceleration enhancement using plasma density modulations*
- #19 **B. Martinez (IST)**  
*Ultra-high-intensity lasers for channel acceleration of positrons*
- #20 **C. Riconda (E. Polytechnique)**  
*Plasma Injector and Electron Acceleration in a Wedge Diffracted High Intensity Laser Pulse*

- #21<sup>†</sup> **W. Zhang (IST)**  
*Strong-field QED features in the leptonic beam collision*
- #22<sup>†</sup> **O. Amaro (IST):** *Electron beam and photon distribution functions after a laser-electron scattering: analytical model accounting for 3D focusing geometry and non-ideal spatio-temporal synchronization*
- #23 **S. Montefiori (MPIK):** *SFQEDtoolkit: a high-performance library for the accurate modelling of strong-field QED effects in relativistic laboratory astrophysics codes*
- #24 **M. Pardal (IST)**  
*Breaking the Radiation Frequency Limit in PIC Codes*
- #25<sup>†</sup> **P. J. Bilbao (IST)**  
*Synchrotron cooling as a progenitor of kinetic instabilities and coherent radiation*
- #26 **C. Badiali (IST):** *An efficient implementation of Neural network models into particle-in-cell simulations for Compton scattering events*
- #27 **C. Badiali (IST):** *Prospect on the application of subluminal pulses as drivers for plasma-based acceleration of non-relativistic muons*

#28

**B. Malaca (IST)**

*Coherent light from plasma waves in density gradients*

#29

**B. K. Russell (U. Michigan)**

*Measuring extreme magnetic fields*

#30

**M. Moreira (IST)**

*Control of the self-modulation and long-bunch hosing instabilities with plasma frequency detuning*

#31<sup>†</sup>

**D. Maslarova (Czech Academy):** *Transient Relativistic Plasma Grating to Tailor High-Power Laser Fields, Wakefield Plasma Waves, and Electron Injection*

#32

**C. Willim (IST)**

*High-energetic proton bunches from double-layer target driven by Laguerre-Gaussian laser*