

HEDS2024 Program

HEDS1-HEDS14 @ 311+312 / ALPS-HEDS-XOPT Joint Session @303 /
HEDSp Poster @Hall A / PLDX symposium @ E26, 2nd floor of Convention Hall

April 22, Mon

17:30 – 19:30__OPIC Welcome Reception @ Bay Bridge Cafeteria, Conference Center 6th Floor

April 23, Tue

9:00 - 9:10__Opening

9:00 Remarks
R. Kodama, Co-Conference Chair of HEDS 2024 (Osaka U)

9:10 - 10:15__HEDS1: Collisionless Shock 1 (Chair; T. Sano)

9:10 G. Gregori (U Oxford)
Overview of Laboratory Astro-Particle Physics Experiments at Laser and Accelerator Facilities

9:50 W. Yao (LULI)
Laboratory investigation on particle energization through magnetized shocks and associated instabilities

10:15 – 10:35__Coffee Break

10:35 - 11:40__HEDS2: Collisionless Shock 2 (Chair; H.-S. Park)

10:35 B. Qiao (Peking U)
Turbulence mediated electron acceleration in laser produced collisionless shock

11:00 R. Dorst (UCLA)
Diamagnetic plasmoid formation in super-Alfvénic, quasi-perpendicular expansion of laser-produced plasma into magnetized ambient plasma at high repetition rates

11:25 Y. Sakawa (Osaka U)
Proton acceleration in a high-intensity laser-driven collisionless shock

11:40 - 11:50__Group Photo

11:50 - 13:15__Lunch Break

13:15 - 15:05__HEDS3: Collisionless Shock 3 (G. Gregori)

13:15 F. Fiúza (U Lisboa)
Particle Acceleration and Energy Partition in Turbulent Collisionless Shocks

13:40 R. Yamazaki (Aoyama Gakuin U)
High-power laser experiment forming supercritical magnetized collisionless shocks

14:05 S.J. Tanaka (Aoyama Gakuin U)
Formation of Magnetized Bow Shocks with High-Power Laser: Dependence of Their Structure on Magnetic Field Orientation

14:20 S. Tomita (Tohoku U)
Particle Acceleration in a Relativistic Weibel-Mediated Shock Propagating to Electron-Proton-Helium Plasmas with Solar Abundance

14:35 T. Jikei (U Tokyo)
Electron Heating by Ion-Weibel Instability in the Presence of Finite Beam-Perpendicular Background Magnetic Field

14:50 S.F. Kamijima (U Tokyo)
Cosmic-ray acceleration and maximum energy in a supernova remnant shock propagating in a stellar wind with a wind termination shock

15:05 - 15:25__Coffee Break

15:25 - 17:00__HEDS4: Turbulence & Instability (Chair; M. Hoshino)

15:25 V. Zhdankin (UW-Madison)
Relativistic Particle Acceleration from Kinetic Plasma Turbulence and Instabilities

15:50 T. Kobayashi (NIFS)
Spontaneous Plasma Confinement Transition in Magnetically Confined Fusion Plasmas

16:15 Z. Dai (IPCM)
Experimental and Simulation Studies of Richtmyer-Meshkov Instability at High Energy Densities

16:30 Z. Li (IPCM)
Experimental study of the bubble merger process induced by the strong blast-wave-driven RM instability

16:45 F. Cobos-Campos (UCLM)
On the initial linear transient phase in Richtmyer-Meshkov Instability

18:00 - 20:00__HEDS Dinner Party

April 24, Wed**9:00 - 10:05__HEDS5: Magnetic Reconnection 1 (Chair; H. Ji)**

- | | |
|------|---|
| 9:10 | M. Hoshino (U Tokyo)
Nonthermal Particle Acceleration Efficiency of Magnetic Reconnection in Various Plasma Environments |
| 9:40 | M.C.M. Cheung (CSIRO)
Testing Plasma Physics with Multi-wavelength Observations & Radiative MHD Simulations of Solar Flares |

10:05 - 10:25__Coffee Break**10:25 - 11:45__HEDS6: Magnetic Reconnection 2 (Chair; L. Suttle)**

- | | |
|-------|--|
| 10:25 | H. Ji (Princeton U)
Electron Acceleration and Ion Acoustic Waves during Low-Beta Magnetic Reconnection using Laser-Powered Capacitor Coils |
| 10:50 | J. Zhong (Beijing Normal U)
Relativistic electron injection acceleration in laser-driven magnetic reconnection plasmas |
| 11:15 | Y. Ping (Beijing Normal U)
Turbulent magnetic reconnection generated by intense lasers and electron acceleration |
| 11:30 | O. Zabiolle (Amplitude)
High Power Nanosecond Laser for Dynamic Shock Compression and roadmap to high peak power laser at high repetition rate |

11:30 - 12:30__Coffee Break**12:30 - 14:15__PLDX Symposium @ E26, 2nd floor of Convention Hall****13:30 - 15:00__HEDSp HEDS Poster @ Hall A**

- | | |
|----------|--|
| HEDSp-01 | S.N. Ryazantsev (HB11 Energy)
Ionization of argon ions K-shell in clusters heated by strong laser pulses with intensity up to 5×10^{21} W/cm ² . |
| HEDSp-02 | T. Pikuz (Osaka U)
Formation of a deep cylindrical cavity in LiF crystal by XFEL radiation |
| HEDSp-03 | Y. Sentoku (Osaka U)
Path for high-gain laser fusion with fast ignition scenario - FIREX-NEO (Numerical Experiment Optimization) project - |
| HEDSp-04 | D. Murayama (Osaka U)
Ab initio molecular dynamics simulations of CH ₄ and H ₂ S mixture at planetary interior conditions |
| HEDSp-05 | R. Kawai (Tohoku U)
Analysis of Intense Laser Pulse Response of Graphene Using First-Principles Calculations |
| HEDSp-06 | J.J. Miranda (UP Diliman)
Magnetic field amplification in layered hollow cylindrical targets |
| HEDSp-07 | M. Hata (Osaka U)
Characteristics of laser-generated whistler waves propagating in high-density plasma |
| HEDSp-08 | J. Dun (Osaka U)
Particle-in-cell simulations of shockwaves in plasma |
| HEDSp-09 | K. Katagiri (Stanford U)
Femtosecond X-ray Imaging of Ultrafast Dislocations in Shocked Diamond |
| HEDSp-10 | A. Hari (Stanford U)
In-situ X-ray Diffraction of Additively Manufactured Eutectic High Entropy Alloy under Shock Compression and Release |
| HEDSp-11 | K. Miyanishi (Spring8)
Experimental platforms for laser-based HED science at the SACLA X-ray free-electron laser facility |

13:00 - 15:00__ALPS-HEDS-XOPT Joint Session @303

- | | |
|----------|---|
| 14:15:00 | Ye Tian (CAS)
Ultrafast laser driven Coherent Terahertz Surface plasmon polariton amplification and electron acceleration |
| 14:45 | Manuel Guizar-Sicairos (1. Institut)
High-Resolution Three Dimensional Imaging Using Ptychography |
| 15:15 | H.-S. Park (LLNL)
Study of astrophysical collisionless shocks in the laboratory |

10:05 - 10:25__Coffee Break**16:15 - 18:45__OPIC Plenary @ 501+502****19:10 - 21:10__OPIC Banquet @ Ballroom of InterContinental Hotel**

April 25, Thu

9:00 - 10:05__HEDS7: Particle Acceleration 1 (Chair; Y. Kuramitsu)

9:00 S. Bulanov (ELI Beamlines)
On parallels and anti-parallels (the similarities and differences) between particle acceleration in space and in laser plasma

9:40 N. Dover (Imperial College London)
Investigating ion acceleration at radiation pressure driven shocks using mid-IR lasers

10:05-10:25 Coffee Break

10:25 - 11:50__HEDS8: Particle Acceleration 2 (Chair; S. Bulanov)

10:25 N. Iwata (Osaka U)
Theoretical modelling of ion acceleration by kJ petawatt lasers with long-pulse and large-spot effects

10:50 I. Pomerantz (Tel Aviv U)
Undepleted Direct Laser Acceleration

11:05 C.M. Lazzarini (ELI ERIC)
The ALFA beamline: a new source of laser-driven high energy electrons at kHz repetition rate

11:20 K. Sugimoto (Kyoto U)
Density dependence of positron acceleration by longitudinal electric field in relativistic laser-plasma interaction

11:35 T. Hara (Osaka U)
Anisotropic backscattering induced by focused single ultra-high intensity laser beam in quantum vacuum

11:50-13:15 Lunch Break

13:15 - 15:15__HEDS9: Collisionless Shock & Accretion Disk (Chair; R. Yamazaki)

13:15 Y. Inoue (Osaka U)
Cosmic-Ray Activities in the Coronae of Active Supermassive Black Holes

13:40 A. Bohdan (IPP)
Electron acceleration at oblique supernova remnant shocks

14:05 E.A. Gorbunov (KU Leuven)
Magnetorotational Instability in electron-ion plasma: Shearing-box simulations

14:30 S. Takasao (Osaka U)
Global MHD simulations of accretion onto a protostar from an MRI-turbulent disk

14:45 S.R. Totorica (Princeton U)
Particle acceleration in scaled kinetic simulations of high-energy-density plasmas

15:00 M.N. Ly (Osaka U)
High-energy neutrino emission from collisionless shocks in black hole coronae

15:15 - 15:35 Coffee Break

15:35 - 17:00__HEDS10 Particle Acceleration 3 (Chair; N. Iwata)

15:35 F. Albert (LLNL)
Laser-driven x-ray sources for high energy density science at the Jupiter Laser Facility

16:00 A. Pirozhkov (QST)
Bright Gamma Flash Generation and Detection

16:15 M. Ota (NIFS)
Study on picosecond measurement of relativistic electron impact ionization inside solids

16:30 Y. Fukuda (QST)
Effect of a plasma mirror on the interactions of intense laser pulses with micron-scale cluster targets

16:45 Y. Kuramitsu (Osaka U)
Monoenergetic sub-relativistic ion acceleration with a nanolayer target mounted on large-area suspended graphene

April 26, Fri

9:00 - 10:45__ HEDS11: Collisionless Shock 4 (Chair; T. Inoue)

- 9:00 A. Vanthieghem (Princeton U)
Electron heating in high Alfvén Mach number collisionless shocks
- 9:25 M. Iwamoto (Kyoto U)
Particle Acceleration Upstream of Relativistic Collisionless Shocks
- 9:50 A. Ciardi (Sorbonne U)
Shocks and energetic particles in weakly collisional plasmas

10:15-10:35 Coffee Break

10:35 - 11:45__ HEDS12: Collisionless Shock 5 (Chair; A. Ciardi)

- 10:35 T. Inoue (Konan U)
PeV Cosmic Ray Acceleration in the Supernova Blast Wave: Kinetic-magnetohydrodynamic Simulations
- 11:00 K. Morikawa (U Tokyo)
Particle acceleration by a relativistic shock propagating into an inhomogeneous medium
- 11:15 K. Kamiido (U Tokyo)
Relativistic collisionless shock propagating in an unmagnetized relativistically hot plasma
- 11:30 S. Isayama (Kyushu U)
Relativistic particle acceleration in counter propagating Alfvén waves

11:55-13:15 Lunch Break

13:15 - 15:15__ HEDS13: Magnetic Reconnection & Particle Acceleration (Chair; Y. Sakawa)

- 13:15 S. Merlini (Imperial College London)
Structure of Reverse Shocks and Radiative Cooling Effects in High Energy Density Plasma Experiments
- 13:40 T. Morita (Kyushu U)
Laser astrophysics experiments for the investigation of plasma heating and acceleration in magnetic reconnection
- 14:05 K. Sakai (NIFS)
Experimental Investigation on Magnetic Reconnection in Electron-Magnetized Plasmas with High-Power Lasers
- 14:30 M. Kanasaki (Kobe U)
Repetitive Generation of Laser-driven Quasi-monoenergetic Multi-MeV Protons from Hydrogen Clusters
- 14:45 Y. Arikawa (Osaka U)
Super-collimated mono-energetic thermal spin-polarized neutron generator
- 15:00 R. Yamada (Osaka U)
First demonstration of thermal neutron deflectometry by a laser driven intense magnetic field

15:15-15:35__ Coffee Break

15:35 - 16:50__ HEDS14: High Energy Density Physics (Chair; Y. Sentoku)

- 15:35 M. Murakami (Osaka U)
Generation of Ultrahigh Magnetic Fields by Microtube to Accelerate Charged Particles
- 15:50 R. Matsui (Kyoto U)
Control of multiscale expansion/relaxation dynamics of micro-structured designed targets irradiated with a high-intensity laser
- 16:05 B. Du (IAPCM)
Modelling of the non-Maxwellian response of DT plasmas to alpha particle transport in ICF hotspot
- 16:20 Y. Takagi (Osaka U)
Analysis of the generation of relativistic electron-flux in long-timescale interactions with non-relativistic lasers
- 16:35 T. Sano (Osaka U)
Particle acceleration and plasma heating in magnetized plasmas by large-amplitude standing whistler waves

16:50 - 17:00__ Closing

- 16:50 Remarks
T. Sano, Co-Conference Chair of HEDS 2024 (Osaka U)