Conference on Laser Energy Science 2016

CLES2016

Tuesday May 17

9:00 – 9:15 Opening Room 418

Opening Remarks

9:00 **H, Azechi**
Conference Chair of CLES2016,
Director, Institute of Laser Engineering, Osaka Univ., Japan
H. Shiraga
Co-Chair of FIWS2016,
Institute of Laser Engineering, Osaka Univ., Japan

9:15-10:30 CLES1：Integrated Experiment (Electron)
Room 418

Chair: P. Norreys, Univ. Oxford, UK

CLES1-1 9:15 **(Invited) Where Do the Fast Electrons Deposit Energy in Laser-Compressed High-Density Fast-Ignition Targets?**
F. Beg[1], C. Jarrott[1], M. Wei[2], C. McGuffey[1], A. Solodov[3], W. Theobald[3], C. Stoeckl[3], R. Betti[3], H. Cchen[4], H., Habara[5], H. Mclean[4], P. Patel[4], J. Santos[6], H. Sawada[7], Rich, Stephens[2], and Toshi YabuuchiI[5]
[1]Center for Energy Research, Univ. of California at San Diego, USA [2]General Atomics, San Diego, USA [3]Laboratory for Laser Energetics, Univ. of Rochester, USA [4]Lawrence Livermore National Laboratory, USA [5)]Osaka Univ., Japan [6]Centre Lasers Intenses et Applications, Univ. of Bordeaux, France [7]Univ. of Nevada, USA

CLES1-2 9:45 **(Invited) Progress of FIREX Project in Japan.**
S. Fujioka[1)], and FIREX Project Team[1]
[1]Institute of Laser Engineering, Osaka Univ., Japan

CLES1-3 10:15 **First Demonstration of Heating Effect in Indirect-Drive Integrated Fast Ignition Experiment,**
Y. Gu
Laser Fusion Research Center, CAEP, China

----- Break （10:30-11:00）-----

11:00-12:30 CLES2：Electron Transport and Generation
Room 418

Chair: S. Fujioka, Osaka Univ., Japan

CLES2-1 11:00 **Study of Magnetic Instability on the Divergence of Ultraintense Laser-Driven Electrons**
X. Yang, B. Xu, Z. Ge, H. Zhuo, and Y. Ma
College of Science, National Univ. of Defense Technology, China

CLES2-2 11:15 **Selectron Transport in The Background Plasma with Steep Density Gradient**
Y.Hayashi[1], A. Das[2] , H. Habara[1], P. Kaw[2], K. A. Tanaka[1]
[1]Osaka Univ., Japan, [2]Institute of Plasma Research, India

CLES2-3 11:30 **High Current Electron Beam Transport in Fast Ignition**
L. Cao [1,2,3]
[1]nstitute of Applied Physics and Computational Mathematics, China [2]HEDPS, Center for Applied Physics and Technology Peking Univ., China [3]IFSA Collaborative Innovation Center, Shanghai Jiao Tong Univ., China

CLES2-4 11:45 **Investigation of Resistive Guiding of Fast Electrons in Ultra Intense Laser-Solid Interactions**
K. Lancaster[1], N. Booth[2], J. Green[2], C. Murphy[1], C. Ridgers[1], and A. Robonson[2]
[1]York Plasma Institute, Department of Physics, Univ. of York, UK [2]Central Laser Facility, STFC Rutherford Appleton Laboratory, UK

CLES2-5 12:00 **Resistivity Gradient Based Guiding of Fast Electrons in the Inverse Conical Taper Configuration**
A. Robinson[1], and H. Schmitz[1]
[1]Plasma Physics Group, Central Laser Facility, STFC Rutherford-Appleton Laboratory, UK

CLES2-6 12:15 **Characteristics of Fast Electrons Generated by Multi Beam of LFEX Laser**
M. Hata[1], H. Sakagami[2], T. Johzaki[3], Y. Ssentoku[4], and H. Nagatomo[1]
[1]Institute of Laser Engineering, Osaka Univ., Japan, [2]National Institute for Fusion and Sciences, Japan, [3]Hiroshima Univ., Japan [4]Univ. of Nevada, USA

----- Break （12:30-13:30）-----

13:30-15:30 CLES3：Proton Fast Ignition
Room 418

Chair: J. Fernandez, Los Alamos National Laboratory, USA

CLES3-1 13:30 **(Invited) Progress in Fundamental and Applied Proton Fast Ignition Research**
C. Mcguffey[1], J. Kim[1], M.-S. Wei, H. Habara[3], T. Yabuuchi[3,8], K. Tanaka[3], W. Theobald[4], B. Qiao[1], F.-N. Beg[1], S.-N. Chen[5], P.-M. Nilson[4], R. Stephens[2], J. Fuchs[5], M. Foord[6], H. Mclean[6], H. Shiraga[7]
[1]Univ. of California San Diego, USA, [2]General Atomics, USA, [3]Osaka Univ., Japan [4]Laboratory for Laser Energetics, Rochester, USA, [5]LULI, École Polytechnique, CNRS, CEA, UPMC, France, [6]Lawrence Livermore National Laboratory, USA, [7]Institute of Laser Engineering, Osaka Univ., Japan, [8](currently) RIKEN, Spring-8 Center, Japan

CLES3-2 14:00 **(Invited) Proton Fast Ignition Scheme Revisited**
J. Honrubia[1], A. Morace[2] and M. Murakami[2]
[1]School of Aerospace Engineering, Polytechnic Univ. of Madrid, Spain, [2]Institute of Laser Engineering, Osaka Univ., Japan

CLES3-3 14:30 **Integrated Simulations of Core Heating for Ion Assisted Fast Ignition**
H. Sakagami[1], T. Johzaki[2], A. Sunahara[3], and H. Nagatomo[4]
[1]Fundamental Physics Simulation Division, National Institute for Fusion Science, Japan, [2] Graduate School of Engineering, Hiroshima Univ., Japan, [3]Institute for Laser Technology, Japan, [4]Institute of Laser Engineering, Osaka Univ., Japan

CLES3-4 14:45 **Proton Fast Ignition: Limits of the Classic Method and Alternative Approaches.**

A. Morace[1] J. Honrubia[2], T. Johzaki[3], H. Sakagaami[4], S. Fujioka[1], A. Yogo[1], M. Murakami[1], Y. Arikawa[1], S. Kojima[1], S. Sakata[1)], Y. Abe[1], N. Kamitsukasa[1], S.-H. Lee[1], S. Tosaki[1], K. Matsuo[1], A. Sagisaka[5], K. Kondo[5], A. Pirozhkov[5], T. Norimatsu[1], T. Jitsuno[1], N. Miyanaga[1], H. Shiraga[1], M. Nakai[1], H. Nishimura[1] and H. Azechi[1]

[1]Institute of Laser Engineering, Osaka Univ., Japan, [2]ETSIA, Univ. Politecnica de Madrid, Spain, [3]Graduate School of Engineering, Hiroshima Univ., Japan, [4]National Institute of Fusion Science, Japan, [5]Kansai Photon Science Institute, Japan Atomic Energy Agency, Japan

CLES3-5 15:00 **Fast Ignition Using Shock Accelerated Ions in the Target Corona**

E. Boella[1], R. Bingham[2], R. Cairns[3], P. Norreys [2,4)], R. Trines[2], M. Vranic[1] and L. Silva[1]

[1]Centro de Fisicade Plasma, Instituto Superior Tecnico, Portugal, [2]STFC Rutherford Appleton Laboratory, UK, [3]Univ. of St. Andrews, UK, [4]Univ. of Oxford, UK

CLES3-5 15:15 **Effect of Resistivity Gradient on Laser Driven Electron Transport and Ion Acceleration**

H. Zhuo[1], X. Yang[1], and S. Zhang[1]

[1]College of Science, National Univ. of Defense Technology, China

----- Break （15:30-16:00）-----

16:00-18:00 CLES4：Ion Acceleration

Room 418

Chair: M. Roth, Technische Univ., Darmstadt, Germany

CLES4-1 16:00 **(Invited) Towards Spectral Control of Laser-Driven Ion Beams Generated in the Relativistic Transparency Regime**

J. Fernandez[1], S. Palaniyappan[1], C. Huang[1], D. Gautier[1], C. Hamilton[1], M. Santiago[1], C. Kreuzer[2], and R. Shah[1]

[1]Los Alamos National Laboratory, USA, [2]Ludwig-Maximilian-Univ., Germany

CLES4-2 16:30 **(Invited) Anomalous Electron Heating and Ion Acceleration with High Contrast Laser Pulses on LFEX**

A. Yogo[1], N. Iwata[1], K. Mima[2], A. Morace[1], S. Tosaki[1], S. Fujioka[1], Y. Arikawa[1], Y. Abe[1], S. Kojima[1], S. Sakata[1], S.-H. Lee[1], K.-F. Law[1], K. Matsuo[1], H. Nagatomo[1], A. Sunahara[2], T. Johzaki[3], H. Sakagami[5], T. Ozaki[5], T. Sano[1], Y. Fujimoto[1], K. Yamanoi[1], T. Norimatsu[1], S. Tokita[1], Y. Nakata[1], J. Kawanaka[1], T. Jitsuno[1], N. Miyanaga[1], M. Nakai[1], H. Nishimura[1], H. Shiraga[1], S. Bulanov[6], A. Sagisaka[5], K. Ogura[5], K. Kondo[6], and H. Azechi[1]

[1]Institute of Laser Engineering, Osaka Univ., Japan, [2] The Graduate School for the Creation of New Photon Industries, Japan, [3]Institute for Laser Technology, Japan, [4]Graduate School of Engineering, Hiroshima Univ., Japan, [5]National Institute for Fusion Science, Japan, [6]Kansai Photon Science Institute, Japan Atomic Energy Agency, Japan

CLES4-3 17:00 **Electron Heating and Ion Acceleration Mechanisms in Pico-Second Scale Interaction between Solid Foil and High Intensity Lasers**

N. Iwata[1], A. Yogo [1], S. Tosaki[1], K. Koga[1], H. Nagatomo[1], Y. Kishimoto[2], H. Nishimura[1], K. Mima[3] and H. Azechi[1]

[1]Institute of Laser Engineering, Osaka Univ., Japan, [2]Graduate School of Energy Science, Kyoto Univ., Japan, [3]The Graduate School for the Creation of New Photonics Industries, Japan

CLES4-4 17:15 **Efficient Ion Acceleration by Collision-Less Shock for Fast Ignition**

K. Mima[1], Q. Jia[2], H.-B. Cai[2], T. Taguchi[3], T. Asahina[4], N. Iwata[4] H. Nagatomo[4], A. Yogo[4]

[1]The Graduate School for the Creation of New Photonics Industries, Japan, [2]HEDPS, Center for Applied Physics and Technology, Peking Univ. and Institute of Applied Physics and Computational Mathematics, China, [3]Faculty of Engineering, Setsunan Univ., Japan, [4]Institute of Laser Engineering, Osaka Univ., Japan

CLES4-5 17:30 **Enhanced Laser-Driven Proton Acceleration from Relativistically Transparent Transversely Nano-striped Target**

M. Murakami[1], J. Wang[1,2], H. Xu[3], J. Ju[2] and W. Yu[2]

[1]Institute of Laser Engineering, Osaka Univ., Japan, [2]State Key Laboratory of High Field Laser Physics, SIOM, China, [3]National Laboratory for Parallel and Distributed Processing, China,

CLES4-5 17:45 **Quasi-Monoenergetic Laser-Driven Ion Acceleration by Coulomb Explosion of Optimized Two-Species Nanocluster**

X. Zhou[1] and M. Murakami[1]

[1]Institute of Laser Engineering, Osaka University, Japan

19:00 – 21:00 Workshop Dinner

Wednesday May 18

9:00-12:10 OPIC Plenary

Room 501+502

----- Break Lunch（12:30-13:30）-----

13:30-15:30 CLES5：Magnetic Field Assisted Fast Ignition

Room 418

Chair: H.-B. Cai, Institute of Applied Physics & Computational Mathematics, China

CLES5-1 13:30 **(Invited) Collimation of Relativistic Electron Beams in Dense Matter by Externally Imposed Magnetic Field**

M. Bailly-Grandvaux[1], D. Batani[1], C. Bellei[1], J.-L. Dubois[1], M. Ehret[1,2], P. Forestier-Colleoni[1], S. Fujioka[3], L. Giuffrida[1], J. Honrubia[4], S. Hulin[1], S. Kojima[3], P. Korneev[1,5], J. Marquès[6], A. Morace[3], P. Nicolaï[1], O. Peyrusse[1], A. Poyé[1], M. Roth[2], S. Sakata[3], G. Schaumann[2], J. Servel[1], V. Tikhonchuk[1], Z. Zhang[3], and J. Santos[1]

[1]Univ. Bordeaux, CNRS, CEA, CELIA, UMR, France, [2]Institut fu□r Kernphysik, Tech. Univ., Germany, [3]Institute of Laser Engineering, Osaka Univ., Japan, [4]Univ. Politécnica de Madrid,

Spain, [5]National Research Nuclear Univ. MEPhI, Russian Federation, [6]LULI, Ecole Polytechnique, CNRS, CEA, UMR, France [7]CEA/DAM/CESTA, France

CLES5-2 14:00 **(Invited) Magnetically Assisted Fast Ignition**

W.-M. Wang[1], P. Gibbon[2], Z. Sheng[3], Y.-T. Li[1] and J. Zhang[3]

[1]Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, CAS, China, [2]Forschungszentrum Ju□lich GmbH, Institute for Advanced Simulation, Ju□lich Supercomputing Centre, Germany, [3]Key Laboratory for Laser Plasmas (MoE) and Department of Physics and Astronomy, Shanghai JiaoTong Univ., China

CLES5-3 14:30 **(Invited) Optimum Solid Target Compression Under the Strong Magnetic Field for Fast Ignition**

H. Nagatomo[1], T. Johzaki[2], K. Matsuo[1], T. Asahina[1], M. Hata[1], A. Sunahara[3], H. Sakagami[4], S.-H. Lee[1], S. Fujioka[1]

[1]Institute of Laser Engineering, Osaka Univ., Japan, [2]Hiroshima Univ., Japan, [3]Institute for Laser Technology, Japan, [4]National Institute for Fusion Science, Japan

CLES5-4 15:00 **Computational Study on Thermal Conduction in Magnetized Plasmas**

T. Asahina[1], H. Nagatomo[1], A. Sunahara[2], T. Johzaki[3], M. Hata[1] and Y. Sentoku[4]

[1]Institute of Laser Engineering, Osaka Univ., Japan, [2]Institute for Laser Technology, Japan, [3] Graduate School of Engineering, Hiroshima Univ., Japan, [4]Univ. of Nevada, USA

CLES5-5 15:15 **Hydrodynamic Instability of High-Energy-Density-Plasma in Strong Magnetic Field**

K. Matsuo[1], H. Nagatomo[1], T. Sano[1], Z. Zhang[2], P. Nicolai[3], J. Breil[3], Y. Sakawa[1], Y. Hara[1], H. Shimogawara[1], Y. Arikawa[1], S. Sakata[1], K.- F. Law[1], S.-H. Lee[1], S. Kojima[1], H. Kato[1], K. Shigemori[1], S. Fujioka[1] and H. Azechi[1]

[1]Institute of Laser Engineering, Osaka Univ., Japan, [2]Institute of Physics Chinese Academy of Sciences, China, [3]CELIA Univ. of Bordeaux, France

----- Break （15:30-16:00）-----

16:00-18:00 CLES6：High Field Generation with Laser

Room 418

Chair: E. Hill, Plasma Physics Group, Imperial College, UK

CLES6-1 16:00 **(Invited) THz Generation from Relativistic Laser Produced Plasmas**

Y.-T. Li[1], G. Liao[1], C. Li[1], W.-M. Wang[1] and Z. Sheng[2]

[1]Institute of Physics, Chinese Academy of Sciences, China, [2]Key Laboratory for Laser Plasmas (MoE) and Department of Physics, Shanghai Jiao Tong Univ., China

CLES6-2 16:30 **(Invited) Taming of Laser Produced Spontaneous Magnetic Fields**

P. Korneev[1], S. Fujioka[2], Y. Aabe[2], E. d'Humieres[3], J. Antos[3] and V. Tikhonchuk[3]

[1]National Research Nuclear Univ. "MEPh", Russian Federation, [2]Institute of Laser Engineering, Osaka Univ., Japan, [3]Univ. of Bordeaux, CNRS, CEA, CELIA, France

CLES6-3 17:00 **Temporal Evolution of External Magnetic Fields Applied to the Cone Target**

A. Sunahara[4], K.-F. Law[1] , S. Sakata[1], S.-H. Lee[1], Y. Aarikawa[1], S. Fujioka[1], T. Johzaki[2], H. Sakagami[3], H. Nagatomo[1], H. Shiraga[1], H. Azechi[1], and FIREX Group[1]

[1]Institute of Laser Engineering, Osaka Univ., Japan, [2]Hiroshima Univ., Japan, [3]National Institute for Fusion Science, Japan, [4]Institute for Laser Technology, Japan

CLES6-4 17:15 **High Magnetic Field Generation by Short Pulse Lasers for FI**

Z. Zhang[1], S. Fujioka[2], B.-J. Zhu[1], F. Li[1] W.-M. Jiang[1], Y.-H. Zhang[1], Y. Abe[2] and Y.-T. Li[1]

[1]Institute of Physics, Chinese Academy of Sciences, China, [2]Institute of Laser Engineering, Osaka Univ. Japan

CLES6-5 17:30 **Electron Acceleration by Laser Driven Beat Wave Excited by Cross-Focused Cosh-Gaussian Laser Beams in Thermal Quantum Plasma**

N. Gupta and A. Singh

National Institute of Technology, Jalandhar, India

CLES6-6 17:45 **(Invited) New Regime of Magnetic Reconnection Laboratory Experiment Realized by Kilo-Tesla Magnetic Field Generated with a Snail Target and LFEX Laser**

Y. Abe[1], K.-F. Law[1], A. Morace[1], A. Yogo[1], S. Kojima[1], S. Sakata[1], S.-H. Lee[1], K. Matsuo[1], A. Oshima[1], Y. Arikawa[1], M. Nakai[1], Y. Sakawa[1], K. Kondo[2], E. d'Humieres[3], V. Tikhonchuk[3], J. J. Santos[3], Z. Zhang[4], Y.-Y. Li[4], T. Norimatsu[1], H. Azechi[1], P. Korneev[5] and S. Fujioka[1]

[1]Institute of Laser Engineering, Osaka Univ., Japan, [2]RLNR, Tokyo Institute of Technology, Japan, [3]CELIA, Univ. of Bordeaux, France, [4]Institute of Physics, Chinese Academy of Science, China, [5]NRNU MEPhI, Russian Federation

18:00-20:00 OPIC Reception

Room 501+502

Thursday May 19

9:00-10:30 CLES7：Integrated Simulation and Modeling

Room 418

Chair: P. Patel, Lawrence Livermore National Laboratory, USA

CLES7-1 9:00 **(Invited) Physical Studies of Fast Ignition at the IAPCM**

H.-B. Cai, S.-Z. Wu, H. Zhang, J.-F. Wu, G.-L. Ren, L.-H. Cao, M.-Q. He, C.-T. Zhou, S.-P. Zhu and X.-T. He

Institute of Applied Physics & Computational Mathematics, China

CLES7-2 9:30 **(Invited) Integrated Simulation of Imploded Core Heating for the FIREX Project**

T. Johzaki[1], H. Nagatomo[2], Y. Sentoku[3], H. Sakagami[4], A. Sunahara[5], S. Fujioka[2], A. Yogo[2],

H. Shiraga[2], H. Azechi[2], and FIREX Project Group[2]
[1]Hiroshima Univ., Japan, [2]Institute of Laser Engineering, Osaka Univ., Japan, [3]Univ. of Nevada, USA, [4]National Institute for Fusion Science, Japan [5]Institute for Laser Technology, Japan

CLES7-3 10:00 **(Invited) Converting High Laser Light Absorption into Efficient Isochoric Heating of Dense Plasmas**
S. Wilks[1], M. Tabak[1], K. Akli[2], D. Higginson[1], C. Jarrott[1], S. Jiang[1], R. Kirkwood[1], M. Levy[3], S. Libby[1], A. Link[1], P. Norreys[3], D. Turnbull[1] and D. Schumacher[2]
[1]Lawrence Livermore National Laboratory, USA, [2]Ohio State Univ., USA, [3]Oxford Univ., UK

----- Break （10:30-11:00）-----

11:00-12:30 CLES8：Novel Scheme of Fast Ignition
Room 418
Chair: A. Robinson, STFC Rutherford-Appleton Laboratory, UK

CLES8-1 11:00 **(Invited) Dense Plasma Heating using Crossed Relativistic Electron Beams**
P. Norreys[1,2,3], N. Ratan[1], L. Ceurvorst[1], J. Sadler[1], M. Kasim[1], J. Holloway[1], R. Trines[2] and R. Bingham[2]
[1]Clarendon Laboratory, Univ. of Oxford, UK, [2] Central Laser Facility, STFC Rutherford Appleton Laboratory, UK

CLES8-2 11:30 **(Invited) Counter-Beam Fast Ignition Experiments and the Related Studies**
Y. Kitagawa[1], Y. Mori[1], Y. Nishimura[1,2], K. Ishii[1], R. Hanayama[1], S. Nakayama[1], T. Sekine[3], N. Sato[3], T. Kurita[3], T. Kawashima[3], H. Kan[3], T. Nishi[4], T. Hioki[5], T. Motohiro[5], H. Azuma[6], A. Sunahara[7], Y. Sentoku[8], E. Miura[9], Y. Arikawa[10], Y. Abe[10], and S. Ozaki[11]
[1]The Graduate School for the Creation of New Photonics Industries, Japan, [2]TOYOTA Technical Development Corp., Japan, [3]Hamamatsu Photonics, K. K., Japan, [4]TOYOTA Central R&D Labs, Inc., Japan, [5]Nagoya Univ., GREMO, Japan, [6]Aichi SR Center, Japan, [7]Institute for Laser Technology, Japan, [8]Univ. of Nevada, USA, [9]National Institute of Advanced Industrial Science and Technology, Japan, [10]Institute of Laser Engineering, Osaka Univ., Japan, [11]National Institute for Fusion Science, Japan

CLES8-3 12:00 **Physics of Fast Heating of an Imploded Core under Counter Beam Irradiation**
Y. Mori[1], Y. Nishimura[1], K. Ishii[1], R. Hanayama[1], Y. Kitagawa[1], T. Sentoku[2], T. Kurita[2], N. Sato[2], T. Kawashima[2], H. Kan[2], T. Nishi[3], T. Hioki[4], T. Momohiro[4], H. Azuma[5], A. Sunahara[6], Y. Sentoku[7] and E. Miura[8]
[1]The Graduate School for the Creation of New Photonics Industries, Japan, [2]Hamamatsu Photonics, K. K., Japan, [3]TOYOTA Central Research and Development Laboratories, Inc., Japan, [4]Nagoya Univ., GREMO, Japan, [5]Aichi Synchrotron Radiation Center In “Knowledge Hub Aichi”, Japan, [6]Institute for Laser Technology, Japan, [7]Univ. of Nevada, USA, [8]National Institute of Advanced Industrial Science and Technology, Japan

CLES8-4 12:15 **Observation of Trace due to Laser-Driven Fast-Electron Currents in a CD Target**
R. Hanayama[1], Y. Nishimura[1,2], Y. Mori[1], K. Ishii[1], Y. Kitagawa[1], T. Sekine[3], T. Kurita[3], N. Sato[3], T. Kawashima[3], H. Kan[3], T. Nishi[4], T. Hiroki[5], T. Motohiro[5], H. Azuma[6], A. Sunahara[7], Y. Sentoku[8] and E. Miura[9]
[1]The Graduate School for the Creation of New Photonics Industries, Japan, [2]TOYOTA Technical Development Corporation, Japan, [3]Hamamatsu Photonics, K. K., Japan, [4]TOYOTA Central Research and Development Laboratories, Inc., Japan, [5]Nagoya Univ., GREMO, Japan, [6]Aichi Synchrotron Radiation Center In “Knowledge Hub Aichi”, Japan, [7]Institute for Laser Technology, Japan, [8]Univ. of Nevada, Reno, USA, [9]National Institute of Advanced Industrial Science and Technology, Japan

----- Break （12:30-13:30）-----

13:30-15:30 CLES9：High Energy Density Physics with High Intensity Lasers
Room 418
Chair: Y.-T. Li, Institute of Physics, Chinese Academy of Sciences, China

CLES9-1 13:30 **(Invited) Nuclear Physics with Laser-Accelerated Ion Beams and Progress in Proton Fast Ignition**
M. Roth,
Technische Univ., Darmstadt, Germany

CLES9-2 14:00 **(Invited) Integrated Modeling of Short-Pulse Laser Interactions with Buried-Layer Targets**
M. Sherlock[1], E. Hill[1], S. Rose[1] and W. Rozmus[2]
[1]Imperial College London, UK, [2]Univ. of Alberta, Canada

CLES9-3 14:30 **(Invited) Electron-Positron Pair Production in HED Plasmas**
E. Hill[1], O. Pike[1] and S. Rose[1]
[1]Plasma Physics Group, Imperial College, UK

CLES9-4 15:00 **(Invited) New Approach to Experimental Observation of the Breit-Wheeler Pair Generation Process**
X. Ribeyre[1], E. d'Humieres[1], S. Jequier[1], O. Jansen[1] and V. Tikhonchuk[1]
[1]Univ. of Bordeaux-CNRS-CEA, Centre Lasers Intenses et Applications, France

----- Break （15:30-16:00）-----

16:00-17:45 CLES10：Fuel Assembly Production
Room 418
Chair: D. Batani, CELIA, Univ. of Bordeaux, France

CLES10-1 16:00 **(Invited) Flash X-Ray Radiography of High Density Spherical Targets for Fast-Ignition**
H. Sawada[1], S. Fujioka[2], S. Lee[2], Y. Arikawa[2], H. Nagatomo[2], K. Shigemori[2], H. Nishimura[2], A. Sunahara[3], T. Shiroto[4], N. Ohnishi[4], W. Theobald[5], F. Perez[6], P. Patel[7] and F. Beg[8]

[1]Univ. of Nevada, USA, [2]Institute of Laser Engineering, Osaka Univ., Japan, [3]Institute for Laser Technology, Japan, [4]Department of Aerospace Engineering, Tohoku Univ., Japan [5]Laboratory for Laser Energetics, Univ. of Rochester, USA, [6]LULI, Ecole Polytechnique, France, [7]Lawrence Livermore National Laboratory, USA [8]Univ. of California San Diego, USA

CLES10-2 16:30 **Effect of High Energy X-Ray on the Indirect Drive Ablative RT Instability**

B. Xu[1], Y. Ma[1], X. Yang[1], W. Tang[1], Z. Ge[1] and Y. Zhao[1]
[1]National Univ. of Defense Technology, China

CLES10-3 16:45 **Double-Shell Target Design and Experiment on SGIII Facility**

Z. Dai[1], J. Li[1], W. Zheng[1], J. Yan[2], W. Pei[1] and S. Zhu[1]
[1]Institute of applied physics and computational mathematics, China, [2]Laser Fusion Research Center, China

CLES10-4 17:00 **A New Turning Method of the Low-Model Asymmentry for Ignition Capsule Implosions**

J. Gu[1], Z. Dai[1], S. Zou[1], P. Song[1], W. Ye[1], W. Zheng[1] and P. Gu[1]
[1]Institute of Applied Physics and Computational Mathematics, China

CLES10-5 17:15 **Shock Velocity Measurement using Frequency Domain Interferometer with Chirped Pulse Laser**

K. Ishii[1], Y. Nishimura[1,2], Y. Mori[1], R. Hanayama[1], Y. Kitagawa[1], T. Sekine[3], T. Kurita[3], N. Sato[3], T. Kawashima[3], H. Kan[3], T. Nishi[4], T. Hiroki[5], T. Momohiro[5], H. Azuma[6], A. Sunahara[7], Y. Sentoku[8], and E. Miura[9]
[1]The Graduate School for the Creation of New Photonics Industries, Japan, [2]TOYOTA Technical Development Corporation, Japan, [3]Hamamatsu Photonics, K. K., Japan, [4]TOYOTA Central Research and Development Laboratories, Inc., Japan, [5]Nagoya Univ., GREMO, Japan, [6]Aichi Synchrotron Radiation Center In "Knowledge Hub Aichi", Japan [7]Institute for Laser Technology, Japan, [8]Univ. of Nevada, USA, [9]National Institute of Advanced Industrial Science and Technology, Japan

CLES10-6 17:30 **Phase Transition in Single Crystal Crystal Yttria-Stabilized Zirconia by Ultra-Intense Laser-Driven Compression**

Y. Nishimura[1,2], K. Ishii[1], Y. Kitagawa[1], Y. Mori[1], R. Hanayama[1], H. Azuma[3], T. Hioki[4], T. Motohiro[4,5], T. Nishi[5], T. Sekine[5], N. Sato[5], T. Kurita[5], T. Kawashima[5], H. Kan[5], A. Sunahara[7], Y. Sentoku[8], and E. Miura[9]
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Friday May 20

9:00-10:30 CLES11 : Integrated experiment and simulation

Room 418

Chair: H. Nagatomo, Institute of Laser Engineering, Osaka Univ., Japan

CLES11-1 9:00 **(Invited) Shock Ignition Studies at the Laboratory for Laser Energetics**

R. Betti[1], A. Bose[1], W. Shang[1,2] and W. Theobald[1]
[1]Fusion Science Center for Extreme States of Matter, Univ. of Rochester, USA, [2]Research Center for Laser Fusion, Chinese Academy of Engineering , China

CLES11-2 9:30 **(Invited) Laser-Plasma Interaction and Shock Generation in the Shock-Ignition Intensity Regime**

D. Batani[1], L. Antonelli[1,2], G. Boutoux[1], A. Colaitis[1], P. Nicolai[1], S. Atzeni[2], G. Cristoforetti[3], L. Gizzi[3], E. Krousky[4], O. Renner[4] and M. Smid[4]
[1]CELIA, Univ. of Bordeaux, France [2]Univ. of Roma «La Sapienza», Italy [3]Intense Laser Irradiation Laboratory, INO-CNR, Italy, [4]Institute of Physics, Czech Republic

CLES11-3 10:00 **(Invited) Direct Drive Fast Ignition Experiments on SG-Ⅱ Up Laser Facility**

W. Wang[1], C. Wang[1], Z. Fang[1], H. An[1], J. Xiong[1], R. Wang[1], A. Lei[1], W. Pei[1], and S. Fu[1]
[1]Shanghai Institute of Laser Plasma, China

----- Break （10:30-11:00）----

11:00-12:30 CLES12 : Electron Generation

Room 418

Chair: F. Beg, Univ. of California at San Diego, USA

CLES12-1 11:00 **(Invited) Properties of Fast Electrons Emitted in Intense Laser-Solid Interaction Experiment**

D. Neely[1,2],
[1]Central Laser Facility, STFC, Rutherford Appleton Laboratory, UK, [2]SUPA, Department of Physics, Univ. of Strathclyde, UK

CLES12-2 11:30 **(Invited) Optimization of Electron Energy Distribution by Reducing Preformed Plasma Generation for Fast Ignition Scheme**

Y. Arikawa[1], S. Kojima[1], A. Morace[1], M. Hata[1], S. Sakata[1], S. Fujioka[1], T. Kawashima[1], Y. Hironaka[1], K. Shigemori[1], Y. Abe[1], X. Vaisseau[1], S-H. Lee[1], T. Gawa[1], K. Matsuo[1], K.-F. Law[1], Y. Kato[1], S. Matsubara[1], S. Tosaki[1], A. Yogo[1], H. Nagatomo[1], S. Tokita[1], Y. Nakata[1], T. Jitsuno[1], N. Miyanaga[1], J. Kawanaka[1], Y. Fujimoto[1], K. Yamanoi[1], T. Norimatsu[1], M. Nakai[1], H. Nishimura[1)], H. Shiraga[1)], FIREX Group[1)], LFEX Group[1], H. Azechi[1], A. Sunahara[2], T Johzaki[3], T. Ozaki[4], H Sakagami[4] and Z. Zhang[5]
[1]Institute of Laser Engineering, Osaka Univ., Japan, [2]Institute for Laser Technology, Japan [3]Hiroshima Univ., Japan, [4]National Institute for Fusion Science, Japan, [5]Key Laboratory of Optic Physics, Institute of Physics, Chinese Academy of Sciences, China

CLES12-3 12:00 **Energy Distribution of Fast Electrons Generated with Relativistic Intensity Laser Depending on Pulse Duration**

S. Kojima[1], Y. Arikawa[1], A. Morace[1], S. Fujioka[1], A. Yogo[1], M. Hata[1], S. Sakata[1], S. Tosaki[1], T. Gawa[1], Y. Taguchi[1], S.-H. Lee[1], K. Matsuo[1], Y. Abe[1], H. Nagatomo[1], M. Nakai[1], H. Nishimura[1], H. Shiraga[1], A. Sunahara[2], T. Johzaki[3], T. Ozaki[4], H. Sakagami[4], H. Azechi[1], FIREX Group[1] and LFEX Group[1]

[1]Institute of Laser Engineering, Osaka Univ., Japan, [2]Institute of Laser Technology, Japan, [3] Hiroshima Univ., Japan, [4]National Institute for Fusion Science, Japan

CLES12-4 12:15 **Hot Electron Behavior in Targets Observed by the Electron Spectral Meter on FIREX**

T. Ozaki[1], Y. Aabe[2], M. Hata[2], K. Matsuo[2], S. Kojima[2], Y. Arikawa[2], S. Fujioka[2], S. Sakata[2], S.-H. Lee[2], H. Sakagami[2], A. Morace[2], A. Sunahara[2], H. Nagatomo[2], T. Johzaki[3], A. Yogo[2)], H. Sshiraga[2], H. Nishimura[2], H. Azechi[2], FIREX Group[2] and GXII-LFEX Group[2]

[1]National Institute for Fusion Science, Japan, [2]Institute of Laser Engineering, Osaka Univ., Suita, Japan, [3]Hiroshima Univ., Japan

---- Break （12:30-13:30）----

13:30-15:00 CLES13：Super Penetration and NIF Status and Prospects

Room 418

Chair: H. Shiraga, Institute of Laser Engineering, Osaka Univ.

CLES13-1 13:30 **(Invited) Relativistic Laser Self-Focusing Approach toward Fast Ignition**

K. Tanaka,
Osaka Univ., Japan

CLES13-2 14:00 **(Invited) Status of the Ignition Program on the National Ignition Facility**

P. Patel
Lawrence Livermore National Laboratory, USA

CLES13-3 14:30 **(Invited) Ultrahigh, Efficiency Exawatt Technology for Full-Scale Fast Ignition**

C. Barty
Lawrence Livermore National Laboratory, USA

15:00-16:00 CLES14：High Intensity Laser Development

CLES14-1 15:00 **The Challenge and Opportunity for High Power Laser Facility Development**

J.-Q. Zhu, X. Li, B. Zhu, J. Zhu, D. Liu, C. Liu, G. Xu, X. Xie, Z. Liu, D. Zhao, X. Lu, Y. Zhang, Z. Jiao, W. Fan, J. Kang, X. Ouyang, J. Miao, Z. Lin and S. Wang
Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China

CLES14-2 15:15 **Diagnostics for High Power Laser in SG II Facility**

X. Ouyang[1], L. Yang[1], D. Liu[1], B. Zhu[1], J. Zhu[2], J.-Q. Zhu[1], Z. Lin[1]

[1]Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China, [2]Shanghai Institute of Laser Plasma, China Academy of Engineering Physics, China

CLES14-3 15:30 **(Invited) Ultrahigh, Efficiency Exawatt Technology for Full-Scale Fast Ignition**

C. Barty
Lawrence Livermore National Laboratory, USA

----- Break （15:30-16:00）-----

----- Summary（16:00-17:15）-----

17:15-17:30 Closing Room 418

Closing Remarks

17:15 **H, Azechi,**
Conference Chair of CLES2016,
Director, Institute of Laser Engineering, Osaka Univ., Japan