

## Program of CIFE '12

### Conference on Inertial Fusion Energy '12

Thursday, April 26

9:00-9:15

*Opening*

Conference Center  
Room 313+314

#### Opening Remarks

9:00

*H. Azechi,*

*Director, Institute of Laser Engineering, Osaka Univ., Japan*

9:15-10:45

*CIFE1: Roadmap and Project*

Conference Center  
Room 313+314

**Chair: H. Nishimura**

**CIFE1-1 National Ignition Campaign: Progress Update**

9:15

*E. I. Moses*

*Lawrence Livermore National Laboratory, USA*

**CIFE1-2 HiPER: The European Path to Laser Energy**

9:45

*C. Edwards*

*STFC Rutherford Appleton Laboratory, United Kingdom*

**CIFE1-3 Present status of FIREX project and the way to iLIFT**

10:15

*H. Azechi*

*Osaka Univ., Japan*

----- Break (10 : 45-11 : 00) -----

11:00-12:30

*CIFE2: Safety and Economics*

Conference Center  
Room 313+314

**Chair: E. Koresheva**

**CIFE2-1 Future Trend Toward the Ultimate Goal of Radwaste-Free Fusion: Feasibility of Recycling/Clearance, Avoiding Geological Disposal**

11:00

*L. El-Guebaly,*

*University of Wisconsin - Madison, USA*

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**CIFE2-2 Tritium issues relating to safety and economical aspects**

**11:30** *T. Tanabe,*

*Kyusyu University., Japan*

**CIFE2-3 Economic Requirements for Commercial Fusion Power**

**12:00** *T. Anklam,*

*Lawrence Livermore National Laboratory, USA*

----- **Lunch Break** (12 : 30 – 13 : 30) -----

<i>13:30-15:00</i>	<i>CIFEp: Poster session</i>	Conference Center Room 315
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<i>15:00-16:00</i>	<i>CIFE3: Core Plasma</i>	Conference Center Room 313+314
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**Chair: H. J. Kong**

**CIFE3-1 High gain direct drive target designs and supporting experiments with KrF**

**15:00** *M. Karasik*

*Naval Research Laboratory, USA*

**CIFE3-2 Integrated Fast Ignition Simulations for Target Design of IFE**

**15:30** *H. Nagatomo*

*Osaka Univ., Japan*

<i>16:00-17:30</i>	<i>CIFE4: Driver</i>	Conference Center Room 313+314
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**Chair: J. Kawanaka**

**CIFE4-1 Low pressure Helium cooled active mirror amplifiers for HiPER kiloJoule**

**16:00** **beamlines**

*J.-C. Chanteloup, A. Lucianett<sup>1</sup>, D. Albach and T. Novo*

*LULI, Ecole Polytechnique, CEA, France,*

## Program of CIFE '12

**CIFE4-2 KrF Laser Development for Fusion Energy**

**16:30** *M. Wolford*

*Naval Research Laboratory, USA*

**CIFE4-3 4-beam coherent combination laser using self-phase-controlled SBS-PCM for LIFE driver**

**17:00** *H. J. Kong, S. Cha, M. Kalal*

*KAIST, Korea*

### Friday, April 27

<b>9:00-10:00</b>	<b><i>CIFE4: Driver (Continued)</i></b>	Conference Center Room 313+314
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**Chair: J.-C. Chanteloup**

**CIFE4-4 Conceptual design of fusion driver at Osaka University**

**9:00** - **Cryogenic Laser Driver** -

*J. Kawanaka, N. Miyanaga, K. Tsubakimoto, T. Jitsuno, T. Kanabe, et al.*

*Osaka Univ., Japan*

**CIFE4-5 A Compact Line Replaceable Unit Laser Driver for Laser Inertial Fusion**

**9:30** **Energy**

*A. Bayramian, S. Aceves, T. Anklam, K. Baker, E. Bliss, et al.*

*Lawrence Livermore National Laboratory, USA*

----- **Break (10 : 00-10 : 15)** -----

<b>10:15-11:45</b>	<b><i>CIFE5: Target and Fueling</i></b>	Conference Center Room 313+314
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**Chair: T. Norimatsu**

**CIFE5-1 Road Map of Reactor Targets Activity in Russia**

**10:15** *N. G. Borisenko, Yu. A. Merkuliev*

*P.N. Lebedev Physical Institute of the Russian, Russia*

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**CIFE5-2 High Rep-Rate Production of IFE Targets Using the FST Technologies**

**10:45** *E. Koresheva.*

*Lebedev Physical Institute, Russia*

**CIFE5-3 Trajectory Calculation of Injected Inertial Fusion Energy Target**

**11:15** *R. Tsuji, T. Endo, H. Yoshida, M. Matsumoto, T. Norimatsu*

*Ibaraki Univ., Japan*

----- Lunch Break (11 : 45-13 : 00) -----

<b>13:00-14:00</b>	<b>CIFE5: Target and Fueling</b> (Continued)	Conference Center Room 313+314
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**Chair: P. Amendt**

**CIFE5-4 Pellet Injector for Inertial Fusion**

**13:00** *J. P. Perin and B. Rus*

*CEA/INAC/SBT, France,*

**CIFE5-5 The Beam Steering for IFE with Degenerate Four-Wave Mixing with Scattered  
and Reflected Light by a Foam Target**

**13:30**

*N. Kameyama, H. Yoshida*

*Gifu Univ., Japan*

<b>14:00-16:45</b>	<b>CIFE6: Chamber and System</b>	Conference Center Room 313+314
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**Chair: S. Konishi**

**CIFE6-1 Technology in HiPER IFE Project under Repetitive Operation**

**14:00** *J. M. Perlado, J. Sanz, J. Alvarez, D. Garoz, R. González-Arrabal, et. al.*

*Instituto de Fusión Nuclear (DENIM)/ETSII/Universidad Politécnica, Spain,*

**CIFE6-2 Degradation of the Transmissive Optics for a Laser-Driven IFE Power Plant  
under Electron and X-Ray Irradiation**

**14:30**

*V. D. Zvorykin, A. S. Alimov, S. V. Arlantsev, B. S. Ishkhanov, A. O. Levchenko,*

*P.N. Lebedev Physical Institute of RAS, Russia*

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----- Coffee Break (15 : 00-15 : 15) -----

Chair: *L. El-Guebaly,*

**CIFE6-3 Impact of Inertial Fusion Nuclear Environment on Structural Materials**

**15:15 Radiation Damage Characteristics**

*M. E. Sawan*

*University of Wisconsin-Madison, USA*

**CIFE6-4 High Temperature LiPb blanket and biomass hybrid for IFE**

**15:45** *S. Konishi*

*Kyoto Univ., Japan*

**CIFE6-5 Ultraintense Lasers Applied to Laser Fusion Material Testing: Production of**

**16:15 Ions, X rays and Neutrons**

*J. Alvarez, J. Fernandez-Tobias, K. Mima, D. Garoz, A. Ribera,*

*Instituto de Fusion Nuclear, Universidad Politecnica de Madrid, Spain,*

<b>16:45-17:00</b>	<b><i>Closing</i></b>	Conference Center Room 313+314
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### **Closing Remarks**

**16:45** *H. Azechi*

*ILE, Osaka University, Japan*

## Program of CIFE '12

13:30-15:00

*CIFE Poster session*

Conference Center  
Room 315

- CIFEp-1      Hi-rep. Counter-illumination Fast Ignition Scheme Fusion**  
*Y. Kitagawa*  
*The Graduate School for the Creation of New Photonics Industries, Japan*
- CIFEp-2      On the Ion Distribution Function in Degenerate Electron Plasmas**  
*K. Sugita, H. Matsuura, and Y. Nakao*  
*Kyushu Univ., Japan*
- CIFEp-3      Laser Inertial Fusion Energy (LIFE) high-gain central-hot-spot target designs**  
*P. Amendt, M. Dunne, D. Hinkel, D. Ho, B. Lasinski, et al.,*  
*Lawrence Livermore National Laboratory, USA*
- CIFEp-4      The neutron yield diagnostics in the fast ignition integrated experiment  
in GEKKO XII and LFEX facility**  
*Y. Arikawa, T. Nagai, H. Hosoda, Y. Abe, S. Kojima et al.,*  
*Osaka Univ., Japan*
- CIFEp-5      Interaction of a Laser Pulse with a Plasma Target with an Externally Applied  
Magnetic Field - a Model of Laser-Driven Implosion**  
*V. V. Kuzenov, S. V. Ryzhkov*  
*Ishlinsky Institute for Problems in Mechanics RAS, Russia,*
- CIFEp-6      Wobbling Heavy Ion Beam Illumination in Heavy Ion Inertial Fusion**  
*S. Kawata*  
*Utsunomiya Univ., Japan*
- CIFEp-7      Experimental cross evaluation of large size ceramic and crystalline  $\text{Yb}^{3+}$ :YAG  
laser gain media performance at high average power**  
*D. Albach, T. Novo and J.-C. Chanteloup*  
*LULI, Ecole Polytechnique, CEA, France,*

## Program of CIFE '12

**CIFEp-8**      **Possibility of using picoseconds terawatt CO<sub>2</sub> lasers in inertial thermonuclear fusion**

*G. A. Baranov P. V. Tomashevich, V. V. Khukharev, Yu. I. Malakhov*

*NII-EFA named after D.V.Efremov, Russia*

**CIFEp-9**      ***HiLASE cryogenically cooled multi-slab amplifiers for Laser Inertial Fusion Energy***

*A. Lucianetti, T. Mocek, M. Divoky, M. Sawicka, P.Sikocinski et al.,*

*HiLASE Project, Institute of Physics ASCR, Czech Republic,*

**CIFEp-10**     **Cryogenic cooling for high power laser amplifiers**

*JP Perin, B Rus*

*CEA/INAC/SBT, France,*

**CIFEp-11**     **The HiPER Laser Design toward Energy Production**

*B. Le Garrec, M. Novaro, R. Juarez, D. Garoz, J.M. Perlado*

*CEA-CESTA, 15 av. Des Sablières, 33114, Le Barp, France,*

**CIFEp-12**     **DiPOLE - An Efficient and Scalable High Pulse Energy and High Average Power Cryogenic Gas Cooled Multi-slab Amplifier Concept**

*P. D. Mason, K. Ertel, S. Banerjee, P. J. Phillips, C. Hernandez-Gomez, et al.*

*Rutherford Appleton Laboratory, United Kingdom*

**CIFEp-13**     **Pilot Target Supply System Based on the FST Technologies: Main Building blocks, Layout Algorithms and Results of the Testing Experiments**

*I. V. Aleksandrova, E. R. Koresheva, E. L. Koshelev, I. E. Ospov*

*P. N. Lebedev Physical Institute, Russia,*

**CIFEp-14**     **Pellet-injection into the laser-fusion reactor.**

*G. A. Baranov, L. N. Rozanov, V. V. Khukharev*

*NII-EFA named after D. V. Efremov, Russia*

## Program of CIFE '12

- CIFEp-15** **Insight into the Relation between the Fuel Microstructure and IFE Targets Response under Their Fabrication, Injection and Transport through the Reaction chamber**  
*I. V. Aleksandrova, A. A. Belolipetskiy, E. R. Koresheva, I. E. Ospov, L. V. Panina, P. N. Lebedev Physical Institute of RAS, Russia,*
- CIFEp-16** **Quantum Molecular Dynamics and Ab initio Studies of The Crystal Structure of Hydrogen and Deuterium**  
*C. Guerrero, J. M. Perlado, S. Cuesta-Lopez  
Universidad Politecnica de Madrid, Spain*
- CIFEp-17** **Development Plan of Actual Size Target Injection Implement for Fast Ignition**  
*M. Matsumoto, T. Norimatsu, T. Endo, H. Yoshida, R. Tsuji  
Institute of Laser Engineering, Osaka University, Japan,*
- CIFEp-18** **Corrosion characteristics of RAFM steels and pure metals in static Pb-17Li**  
*M. Kondo, T. Muroga  
Tokai University, Japan,*
- CIFEp-19** **Theoretical Studies on Environments in laser fusion liquid wall chamber**  
*H. Furukawa, T. Norimatsu, M. Nakai  
Institute for Laser Technology, Japan,*
- CIFEp-20** **Optical Inspections of Material Surface Quality Changes with Laser Displacement Sensors, Including Applications to Laser Inertial Fusion**  
*K. Kasuya, W. Mroz, B. Budner, S. Motokoshi, K. Mikami  
Institute of Applied Flow, Japan*
- CIFEp-21** **Stopping of Energetic Ions from Burning Plasma in Corona Plasmas**  
*K. Mima, J. Alvarez, T. Tajima, T. Johzaki, and H. Nagatomo,  
The Graduate School for the Creation of New Photonics Industries, Japan,*
- CIFEp-22** **Silica final lenses subject to HiPER direct irradiation**  
*D. Garoz, A. Rivera, R. Juarez, J. Alvare, R. Gonzalez-Arrabal.,  
Instituto de Fusion Nuclear, UPM, Spain,*



## **Program of CIFE '12**

**CIFEp-23    The technofusion project for fusion technology development: opportunities for the inertial community**

*A. Rivera, J. Alvarez, R. Gonzalez-Arrabal, D. Garoz, J.M. Perlado*

*Instituto de Fusión Nuclear, Universidad Politécnica de Madrid, Spain*

**CIFEp-24    Plasma facing materials for fusion reactor applications**

*R. Gonzalez-Arrabal, N. Gordillo, A. Rivera, D. Garoz, J. Alvarez, et al.,*

*Instituto de Fusión Nuclear, ETSI de Industriales, Spain,*

**CIFEp-25    Evolution of the Self Cooled Lead Lithium Blanket for HiPER Reactor**

*R. Juárez, J. Sanz, J. Hernández, C.Sánchez, C. Zanzi, J.M. Perlado*

*Instituto de Fusión Nuclear, UPM, Spain*

**CIFEp-26    Atomic Physics Modeling and Applications for ICF Plasmas**

*E. Mínguez, R. Florid, M.A. Mendoza, J.G. Rubiano, R. Rodríguez et al.,*

*DENIM, Polytechnic University of Madrid, Spain*