The International Committee on Ultra-High Intensity Lasers

ICUIL 2012 CONFERENCE

September 16 – 21, 2012
Mamaia, Romania

ORGANIZED BY:

NATIONAL INSTITUTE FOR LASER, PLASMA AND RADIATION PHYSICS
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ICUIL 2012 CONFERENCE – Final Report

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Summary

The 5th International Conference "The International Committee on Ultra-High Intensity Lasers" - ICUIL 2012 CONFERENCE - took place in Mamaia, Romania, from September 16th to 21th, 2012 and was organized by National Institute for Laser, Plasma and Radiation Physics. This biennial meeting emphasizes on the generation, amplification, compression, and measurement of high-intensity pulses as well as applications.

This activity was started from a proposal to organize a workshop for discussion on international cooperation on development and applications of compact, ultrahigh power lasers at the Second Meeting of the Organization for Economic Co-operation and Development Global Science Forum (OECD GSF) in January 2000 by Dr. Yukio Sato of Japan. Approval by GSF, this workshop was held as the "OECD Global Science Forum Workshop on Compact High-Intensity Short-Pulse Lasers: Future Directions and Applications" in Kyoto, 28-30 May 2001.

After this Workshop, the OECD GSF Coordinating Committee on Compact High-Intensity Short-Pulse Lasers was established at the Sixth Meeting of GSF in January 2002 in order to determine the coordination mechanism to strengthen the community for international co-operative activities. During these two years, this committee has organized "A Workshop on Technological Bottlenecks in Compact High-Intensity Short Pulse Lasers", 1-4 April 2003 in Paris. With the support of Dr. J. Osborne, GSF Chair, the committee has made a proposal to IUPAP to establish a committee to promote the international collaboration in the development of ultrahigh intensity lasers and their applications. This proposal was accepted and the IUPAP Working Group: the International Committee on Compact, Ultrahigh Intensity Lasers (ICUIL) has been established in October 2003.

THE OBJECTIVES OF ICUIL ARE

- To provide a venue for discussions among representatives of high-intensity laser facilities and members of user communities, on international collaborative activities such as the development of the next generation of ultrahigh intensity lasers, exploration of new areas of fundamental and applied research, and formation of a global research network for access to advanced facilities by users.

- To promote unity and coherence in the field by convening conferences and workshops dedicated to ultrahigh intensity lasers and their applications.

- To accelerate progress in the field by sharing information, exploring opportunities for joint procurement, and exchanging equipment, ideas and personnel among laser laboratories world-wide.

- To attract students to high-field science by promoting their education and training, their interactions with prominent scientists, and access to the latest equipment, results and techniques.

- To strengthen and exploit synergy with other relevant fields and techniques, notably accelerator-based free electron lasers.

Topics

Ultrahigh-intensity-laser design and performance
- OPCPA-Based
- Nd Glass-Based
- Ti:Sapphire-Based

• Novel technologies for ultra-intense lasers
- Grating and compressor modeling and fabrication
- High damage threshold laser components
- Temporal and spatial property/pulse control
- Spatial, temporal, and contrast characterization

• Laser acceleration

• Applications with extreme light

• Short-wavelength sources

• Attosecond science

• Plasma optics

Preparation

Following the success of the 2004 (Lake Tahoe, U.S.), 2006 (Cassis, France), 2008 (Tongli, China), and 2010 (Watkins Glen, U.S.), the 2012 Conference was another excellent opportunity for researchers in the field to share experiences, new ideas, and visions for the future.

Preparatory work for the Conference began in 2011, when organizers sent invitations and the Conference website has been opened**:** **http://icuil2012.inflpr.ro/.** The site posted all information about the Conference, such as scientific and organizing committees, the list of approved topics, names of invited speakers, and other administrative details - venue, registration forms for participants, exhibitors, and visa information. This site was kept constantly up to date, displaying the invited papers, Conference program and other important announcements.

Abstract submission was opened from April 20 to June 18 (extended deadline), with deadline for invited paper summary: July 1st, 2012.

Sponsoring

The organizing team requested financial support from SILMI, National Institute of Laser, Plasma and Radiation Physics (INFLPR) and Romanian Ministry of Education, Research and Innovation which was awarded. Support was also asked from private companies (laser and optics manufacturing and distribution). 25 companies became involved in the sponsoring: Thales Optronique, Amplitude Technologies, Imagine Optic, SILIOS Technologies, Excel Technology Europe, Horiba Jobin Yvon, Sagem Defense Securite, Cristal Laser, Acai BFI, Fastlite, ARDOP,

Phasics SA, Crystal System, Continuum, Plymouth Grating Laboratory, Aperture Optical Sciences, Northrop Grumman, SCHOTT North America, CVI Melles Griot, IMARKE, Okamoto Optics Works, Femtolasers, Heraeus Quarzglas, AXIS Photonique, Femtolasers, Advanced Optics Schott Ag.

Participants

On this edition were **170 participants** from universities and research institutes, and representatives of industrial companies. Many participants came for the first time in Romania.

FRANCE – 39

- Ecole Polytechnique – 5
- Laboratoire d'Optique Appliquee (LOA) – 3
- Laboratoire d'Utilisation des Lasers Intenses (LULI) – 1
- Centre National de la Recherche Scientifique (CNRS) – 1
- Commissariat a l'Energie Atomique (CEA) – 2
- Universite Bordeaux – 2
- LP3-CNRS-AMU, Marseille – 1
- Domaine Universitaire de Saint Jérôme – 1
- Exhibitors – 23: Thales Optronique, Amplitude Technologies, Imagine Optic, SILIOS Technologies, Excel Technology Europe, Horiba Jobin Yvon, Sagem Defense Securite, Cristal Laser, Acai BFI, Fastlite, ARDOP, Phasics SA.

USA – 31

- Lawrence Livermore National Laboratory – 4
- Lawrence Berkeley National Laboratory – 2
- Laboratory for Laser Energetics, University of Rochester – 7
- Center for Ultrafast Optical Science, University of Michigan – 3
- Massachusetts Institute of Technology – 1
- Ohio State University – 1
- University of Texas at Austin – 2
- Exhibitors – 11: Crystal System, Continuum, Plymouth Grating Laboratory, Aperture Optical Sciences, Northrop Grumman, SCHOTT North America

ROMANIA – 25

- INFLPR – 21
- University of Bucharest – 1
- IMARKE – 3

GERMANY – 16

- Max-Born-Institute, Berlin – 3
- Institute of Applied Physics, Friedrich Schiller, Univ. Jena – 1
- Max-Planck-Institut für Quantenoptik, Garching – 1
- Ludwig-Maximilians-Universität München – 1
- Helmholtz-Institute Jena – 1
- Helmholtz-Zentrum Dresden-Rossendorf – 1
- GSI-Darmstadt – 4
- TU Darmstadt – 1
- Exhibitors – 3: Advanced Optics Schott AG, Heraeus Quarzglas, Excel Technology Europe

UNITED KINGDOM – 14

– Central Laser Facility, STFC Rutherford Appleton Laboratory – 6
– Strathclyde University – 2
– AWE, Plasma Physics Department – 2
– John Adams Institute for Accelerator Science, Oxford – 1
– Exhibitors – 3: CVI Melles Griot

JAPAN – 11

– Institute of Laser Engineering, Osaka University – 4
– Japan Atomic Energy Agency, Kyoto – 2
– Doshisha University, Kyoto – 2
– Institute of Laser Science, Tokyo – 1
– Japan Synchrotron Radiation Research Institute, Hyogo – 1
– Exhibitors – 1: Okamoto Optics Works

CHINA – 9

– Shanghai Institute of Optics and Fine Mechanics – 3
– Anhui Institute of Optics and Fine Mechanics – 2
– Xi'an Institute of Optics and Fine Mechanics – 2
– National Laboratory for Condensed Matter Physics, Beijing – 1
– Pekin University – 1

RUSSIA – 8

– Institute of Applied Physics, Nizhny Novgorod – 6
– P. N. Lebedev Physical Institute, Moscow – 1
– Active Optics NightN Ltd., Shatura – 1

INDIA – 5

– Tata Institute of Fundamental Research, Mumbai – 2
– Raja Ramanna Centre for Advanced Technology, Indore – 2
– High Pressure & Synchrotron Radiation Physics Division, Mumbai – 1

KOREA – 4

– Electronics and Telecommunications Research Institute (ETRI) – 3
– Advanced Photonics Research Institute (APRI), Gwangju – 1

CANADA – 2

– Institut National de la Recherche Scientifique, Quebec – 1
– Exhibitors – 1: AXIS Photonique

SPAIN – 1

– Institut de Ciencies Fotoniques, Barcelona – 1

PORTUGAL – 1

– Instituto Superior Tecnico, Lisbon – 1

CZECH REPUBLIC – 1

– ELI-Beamlines Scientific Team, Prague – 1

AUSTRIA – 1

– Exhibitors – 1: Femtolasers

HUNGARY – 2

– ELI-HU Szeged – 2

Contributions

The Scientific Committee selected **118 scientific papers** with authors from **16 countries**: **24 invited papers, 59 oral communications and 35 posters.**

The Scientific Committee of the Conference consisted of 25 prominent scientific personalities from home and abroad. We are expressing, in particular, our gratitude towards **Prof. Dr. Toshiki Tajima**, **Prof. Dr. Ing. Dan Dumitras, Dr. Gilles Chériaux,** and **Dr. Jie Qiao**. The Conference began under the extraordinary auspices of the opening announcement by Prof. Toshiki Tajima about signing the financing paper of the project "Extreme Light Infrastructure - Nuclear Physics" - ELI-NP from EU funds.

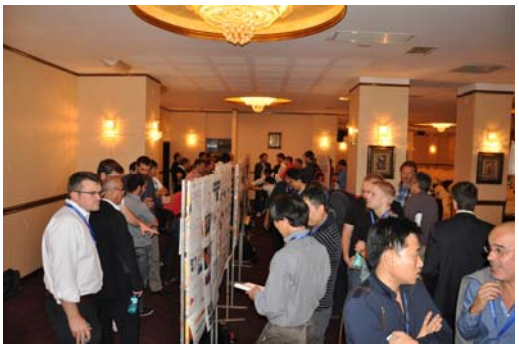
The Conference took place in plenary sessions grouped as follows:

- *Regional Overview on Ultrahigh Intensity Lasers and Applications* – ***3 speakers***
- *Laser Acceleration* – ***7 speakers***
- *OPCPA-Based Ultra Intense Lasers* – ***6 speakers***
- *Ultra Intense Laser Pulses* – ***6 speakers***
- *Nd Glass Based High Energy Petawatt Lasers* – ***4 speakers***
- *Grating, Stretcher and Compressor Modeling, Fabrication, and Alignment* – ***3 speakers***
- *Ti Sapphire Based Ultra Intense Lasers* – ***6 speakers***
- *Novel Technologies for Ultra-Intense Lasers* – ***8 speakers***
- *Spatial, Temporal, and Contrast Characterization* – ***6 speakers***
- *Technology Development for Improving Laser Components* – ***6 speakers***
- *Novel Technologies for Ultra-Intense Lasers* – ***8 speakers***
- *Attosecond Science, Short Wavelength Sources, Plasma Compression/ Plasma Optics* – ***7 speakers***
- *IZEST Talk, Extreme Light Overview Talk, Applications with Extreme Light* – ***9 speakers***
- *Laser Development in Romania* – ***4 speakers***

A jury of scientific personalities present at this Conference (**Toshiki Tajima, Wolfgang Sadner, Terrance Kessler, Christopher Barty, Tsuneyuki Ozaki**) selected the best three poster presentations that were awarded. The winners were as follows: First Place - PhD. Christian BRABETZ (Germany) for his work "Beam Hollow Mask Creation with Continuous Phase Diffractive at PHELIX", Second place - Dr. Laura Emilia IONEL (Romania) for the work "Design of Multi-PW Non-Linear Thomson Scattering Experiments" and Third Place - Phd. Kyosuke IZUNO (Japan) for his work "Temperature Dependence of the Emission Cross-Section of Yb-doped Ceramic Materials from 298K to 393K"

Venue and accommodation

Regarding the technical conditions of the Conference, we assured very good equipped conference rooms at the Hotel Malibu. This included all modern presentation systems (projectors, audio systems and laptops) and appropriate assistance in 2 rooms were Conference sections took place (Papers, Posters, Exhibition).



Scientific impact

The International Committee on Ultra-High Intensity Lasers (ICUIL) was concerned with the growth and vitality of the entire international field of ultra-high intensity laser science, technologies, and education. Our goals were to provide a venue for discussions, among representatives of high-intensity laser facilities and members of user communities, on international collaborative activities such as developing the next generation of ultra-high intensity lasers, exploring new areas of fundamental and applied research, and forming a global research network for access to advanced facilities by users.

Our primary strategy was to promote unity and coherence in the field by convening conferences dedicated to ultrahigh-intensity lasers and their applications.

The participation of student was strongly encouraged, both locally and from foreign institution – namely, by applying a reduced registration fee. While most of them opted for presenting a poster paper, in several cases students delivered a talk.

ICUIL maintains several initiatives including establishing a path beyond laser-matter interaction in the relativistic regime toward ultra-relativistic sciences and pursuing collaborative development of future laser sources to conduct laser-acceleration science and technology research. As highlighted in the talks and posters presented in this Conference, today's high-intensity lasers make it possible for exciting research opportunities in areas of plasma physics, nuclear physics, particle physics, and astrophysics. Small-to-medium-scale, ultra intense lasers are the core of these scientific domains today and with the high-energy, ultra-intense laser of tomorrow, we will be able to reach new frontiers of extreme light.

Committees

CONFERENCE CO-CHAIRS:
Toshiki Tajima
Ludwig-Maximilians-Universität, Fakultät für Physik, Garching, Germany
Dan Dumitras
National Institute for Laser, Plasma and Radiation Physics, Bucharest, Romania

PROGRAM CO-CHAIRS:
Gilles Chériaux
Laboratoire d'Optique Appliquée, Palaiseau, France
Jie Qiao
Laboratory for Laser Energetics, University of Rochester, Rochester, NY, USA

PROGRAM COMMITTEE
Vincent Bagnoud-GSI, Germany
Nathalie Blanchot-CEA-CESTA, France
John Crane-Lawrence Livermore National Laboratory, NIF ARC and Photon Science, USA
Christophe Dorrer-University of Rochester's Laboratory for Laser Energetics, USA
Cristina Hernandez-Gomez-Rutherford Appleton Laboratory, UK
Efim Khazanov- Institute of Applied Physics, Nizhny Novgorod, Rusia
Hiromitsu Kiriyama-Japan Atomic Energy Agency (JAEA), Japan
Georg Korn-ELI Deputy Coordinator, Germany
Ferenc Krausz-Max Planck, Institut fur Quantenoptik(MPQ), Germany
Jongmin Lee-Gwangju Institute of Science and Technology (GIST), Korea
Catherine LeBlanc-LULI, France
Ruxin Li-SIOM, China
R. Lopez-Martens-LOA-ENSTA-Ecole Polytechnique, France
Jerome Neauport-CEA CESTA, France
Karoly Osvay -University of Szeged, Hungary
Jorge Rocca-Colorado State University, USA
Csaba Toth-Lawrence Berkeley National Laboratory, USA
Daniel Ursescu-Solid State Laser Laboratory, INFLPR,Romania
Zhiyi Wei-IOP/CAS, China
Matthew Zepf-Queens University Belfast, UK
Qihua Zhu-Research Center of Laser Fusion / CAS, China

Invited speakers

W. Sandner (Max-Born-Institute, Berlin, Germany)
C. Barty (Lawrence Livermore National Laboratory, CA, USA)
H. Azechi (Institute of Laser Engineering, Osaka University, Japan)
A. Sergeev (Institute of Applied Physics, Nizhny Novgorod, Russia)

L. Veisz (Max-Planck-Institut für Quantenoptik, Garching, Germany)
Z. M. Sheng (Shanghai Jiao Tong University, China) (replaced by R. X. Li)
T. Ditmire (University of Texas at Austin, TX, USA)
R. X. Li (Shanghai Institute of Optics and Fine Mechanics, China)
C. Haefner (Lawrence Livermore National Laboratory, CA, USA)
N. W. Hopps (AWE, Plasma Physics Department, Aldermaston, UK)
N. Bonod (Institut Fresnel CNRS, Marseille, France)
T.M. Jeong (Advanced Photonics Research Institute, Gwangju, Korea)
C. LeBlanc (LULI Ecole Polytechnique, Palaiseau, France)
W. P. Leemans (Lawrence Berkeley National Laboratory, CA, USA) (could not attend)
H. P. Howard (Laboratory for Laser Energetics, University of Rochester, NY, USA)
J. D. Shao (Shanghai Institute of Optics and Fine Mechanics, China)
R. Lopez-Martens (Laboratoire d'Optique Appliquee – ENSTA, Palaiseau, France)
A. Galvanauskas (Center for Ultrafast Optical Science, University of Michigan, USA)
J. Dawson (Lawrence Livermore National Laboratory, CA, USA) (replaced by J. Crane)
T. Tajima (IZEST, Palaiseau, France)
G. Korn (ELI-Beamlines Scientific Team, Prague, Czech Republic)
G. Mourou (IZEST, Palaiseau, France)
D. C. Dumitras (National Institute for Laser, Plasma and Radiation Physics, Romania)
R. Dabu (National Institute for Laser, Plasma and Radiation Physics, Romania)

The International Committee on Ultra-High Intensity Lasers ICUIL

BOOK OF ABSTRACTS

ICUIL 2012 CONFERENCE

September 16 - 21, 2012
Mamaia, Romania

LOCAL ORGANIZING COMMITTEE

Prof. Dr. Ing. **Dan Dumitras** - Chairman
Dr. **Cristina Achim** - Secretary
Dr. **Daniel Ursescu** - Program/Scientific
Consuela Matei - Program/Social
Dr. **Ana Maria Bratu** - Conference Documents
Drd. **Mioara Bercu** - Conference Materials
Drd. **Stefan Banita** - Technical
Dr. **Mihai Patachia** - Webmaster
Ec. **Manuela Raileanu –** Treasurer

Final program

ICUIL 2012 CONFERENCE

September 16 - 21, 2012

Mamaia, Romania

PROGRAM

Sunday, 16 September 2012

7:00 PM – 9:00 PM, Malibu Hotel, Mamaia

Monday, 17 September 2012

7:30 – 8:30 Breakfast

Regional Overview on Ultrahigh Intensity Lasers and Applications –G. Mourou (Chair)

8:30 M1-1 *Overview for the Ultrahigh Intensity Laser Development Effort in Europe*
W. Sandner (Invited)

9:00 M1-2 *Overview for the Ultrahigh Intensity Laser Development Effort in North America*
C. Barty (Invited)

9:30 M1-3 *Overview for the Ultrahigh Intensity Laser Development Effort in Asia*
H. Azechi (Invited)

10:00 Coffee break

Laser Acceleration – C. Tosh (Chair)

10:30 M2-1 *Laser Acceleration in the Radiation-Pressure-Regime from Ultra-Thin Polymer Foils*
B. Aurand, J. Bierbach, S. Herzer, O. Jäckel, S. Kuschel, J. Polz, C. Rödel, H. Zhao, P.Gibbon, A. Karmakar, B. Elkin, G.G. Paulus, M.C. Kaluza, **T. Kühl**

10:45 M2-2 *MeV Ion Acceleration from Ultra-High Intense Laser Matter Interaction and Their Applications*
B. Ramakrishna, M. Murakami, M. Borghesi, L. Ehrentraut, P. V. Nickles, M. Schnürer, S. Steinke, J. Psika, V. Tikhonchuk, W. Sandner, T. Cowan, S. Ter-Avetisyan

11:00 M2-3 *Generation and Acceleration of High-Energy Mid-Z Ions by Petawatt-Class Laser Systems in Structured Targets* **A. Korzhimanov**, E. Efimenko, S. Golubev, A. Kim

11:15 M2-4 *Laser Acceleration of High-Quality Ion Beams for Cancer Radiotherapy*
Z. Harman, B. J. Galow, Y. I. Salamin, J.-X. Ling, C. H. Keitel

11:30 M2-5 *Laser-Driven Nanosecond Proton Source and Its Applications*
J. H. Bin, K. Allinger, W. Assmann, G. Drexler, A. A. Friedl, D. Habs, P. Hilz, N. Humble, D. Kiefer, W. J. Ma, D. Michalski, M. Molls, S. Reinhardt, T. E. Schmid, O. Zlobinskaya, J. Schreiber, J. J. Wilkens

11:45 M2-6 *Laser Shaping and Efficient Proton Acceleration by a Plasma Lens*
H. Y. Wang, C. Lin, J. E. Chen, X.T. He, W. J. Ma, J. H. Bin, J. Schreiber, T. Tajima, D. Habs, X. Q. Yan

12:00 M2-7 *Stable Laser Ion Acceleration in the Light Sail Regime*
S. Steinke, P. Hilz, M. Schnürer, G. Priebe, F. Abicht, J. Bränzel, D. Kiefer, C. Kreuzer, J. Schreiber, A. A. Andreev, T. P Yu, A. Pukhov, W. Sandner

12:30 Lunch

OPCPA-Based Ultra Intense Lasers – C. Dorrer (Chair)

13:30 M3-1 *Prospects of PEARL-10 and XCELS Laser Facilities*

A. Sergeev (Invited), A. A. Shaykin, E. A. Khazanov

14:00 M3-2 *Tunable High-Power Femtosecond Mid-Infrared Pulses Generated by a Long-Wavelength-Seeded OPCPA*
P. Yuan, L. Qian, G. Xie

14:15 M3-3 *Development on Ultra-Broad Band High Intense Laser Propagation Optics for Exa-watt Laser*
Y. Fujimoto, S. Kubo, K. Kuroda, K. Mikami, H. Murakami, S. Motokoshi, T. Jitsuno, K. Fujioka, S. Nuki, I. Shouji, J. Kawanaka, N. Miyanaga

14:30 M3-4 *Conceptual Design of Sub-Exa-Watts OPCPA System*
J. Kawanaka, and Gekko-EXA design Team

14:45 M3-5 *Generation of High Contrast 1053nm Laser Pulse Based on Non-Collinear Optical Parametric Amplification*
Z. Shen, Z. Wang, C. Liu, H. Fan, **Z. Wei**

15:00 M3-6 *Sub-5-fs Multi-TW OPCPA Development*
L. Veisz (Invited), D. Rivas, G. Marcus, X. Gu, J. Mikhailova, A. Buck, T. Wittmann, C. M. S. Sears, J. Xu, D. Herrmann, V. Pervak, F. Krausz

15:30 Coffee break

Ultra Intense Laser Pulses – C. Hernandez-Gomez (Chair)

16:00 M4-1 *Upper Limit Power for Self-Guided Propagation of Intense Lasers in Plasma*
Z. M. Sheng (Invited), W. M. Wang, M. Zeng, Y. Liu, S. Kawata, C. Y. Zheng, W. B. Mori, L. M. Chen, Y. T. Li, J. Zhang

16:30 M4-2 *Toward the Development of Rep-Rated Multi-PW Lasers*
T. Ditmire (Invited)

17:00 M4-3 *Towards Ultra-High Intensity Pulses with Fiber Laser Systems*
A. Klenke, S. Demmler, T. Gottschall, T. Eidam, S. Hädrich, J. Rothhardt, J. Limpert, A. Tünnermann

17:15 M4-4 *The Texas Petawatt Laser and Current Experiments*
E. Gaul, M. Martinez, T. Borger, G. Dyer, M. Ringuette, M. Spinks, D. Hammond, W. Bang, H. Quevedo, A. Bernstein, M. Donovan, T. Ditmire

17:30 M4-5 *Technology Development for Multi-PW OPCPA Based Laser System*
M. Galimberti, J. Alston, S. P. Blake, A. G. Boyle, O. Chekhlov, J. Collier, R. J. Clark, S. Hancock, R. Heathcote, C. Hernandez–Gomez, C. Hooker, A. Lyachev, P. Matousek, I. O. Musgrave, D. Neely, P. A. Norreys, B. Parry, R. Pattathi, I. Ross, W. Shaikh, D. Symes, Y. Tang, T. B. Winstone, B. E. Wyborn.

17:45 M4-6 *SIOM 10PW Laser System Development*
R. X. Li (Invited)

Tuesday, 18 September 2012

7:30 – 8:30 Breakfast

Nd Glass Based High Energy Petawatt Lasers – J. Qiao (Chair)

8:30 T1-1 System *Development for a 4 PW Capability at the National Ignition Facil*
C. Haefner (Invited), J. K. Crane, D. Alessi, P. Arnold, S. Betts, E. S. Bliss, C. Boley, M. Bowers, G. Britten, K. Christensen, J. Davis, M. Fischer, J. Galbraith, R. Hackel, J. Halpin, J. Heebner, M. Henesian, M. Hermann, J. Hernandez, F. Holdener, D. Homoelle, J. Honig, J. Jarboe, T. Lange, J. Lusk, R. Lyons, D. McGuigan, B. McHale, J. B. McLeod, L. Pelz, B. Perry, H. Phan, T. Reitz, M. Rushford, N. Schenkel, L. Seppala, L. Siegel, R. Sigurdsson, S. Slater, R. Speck, T. Spinka, K. Stanion, D. Swort, J. Wolfe, N. Wong, T. Zobrist, C. P. J. Barty, G. Tietbohl

9:00 T1-2 *Orion Facility Status Update*
N. W. Hopps (Invited), T. H. Bett, C. Danson, S. Duffield, E. Elsmere, D. Egan, M. Girling, E. Harvey, D. Hillier, D. Hoarty, D. Hussey, S. James, S. Parker, P. Treadwell, D. Winter

9:30 T1-3 *300 J Nd:glass Laser with Pulse Repetition Rate of 1 Shot/1 Minute*
A. A. Kuzmin, E. A. Khazanov, A. A. Shaykin

9:45 T1-4 *Fiber Based Modulator Systems at 1053 nm for 'Shaped' Long Pulse on LULI2000*
L. Meignien, J. P. Zou, E. Brambrink, P. Audebert

10:00 Coffee break

Grating, Stretcher and Compressor Modeling, Fabrication, and Alignment – C. LeBlanc (chair)

10:30 T2-1 *Recent Advances in High Damage Threshold Diffraction Gratings for Pulse Compression Applications*
N. Bonod (Invited)

11:00 T2-2 *Design and Analysis of a Meter-Size Deformable Multilayer-Dielectric-Grating–Based Compressor for kilojoule, Petawatt Laser Systems*
J. Qiao, Z. De Santis, A. Kalb, and J. Papa

11:15 T2-3 *Precision Alignment Techniques for Eight Parallel Compressors on the National Ignition Facility*
J. K. Crane, R. Hackel, M. Hermann, J. Halpin, J. Honig, E. S. Bliss, C. Boley, G. Britten, D. Griggs, M. Henesian, J. E. Hernandez, T. Lange, D. McGuigan, J. B. McLeod, H. Nguyen, A. Rowe, M. Rushford, C. Haefner, G. Tietbohl

11:30 – 12:30 Time dedicated to exhibition

12:30 Lunch

Ti Sapphire Based Ultra Intense Lasers – G. Chériaux (Chair)

13:30 T3-1 *1.5-PW Ti:sapphire Laser System and High Field Science*
T.M. Jeong (Invited), J. H. Sung, S. K. Lee, J. W. Yoon, T. J. Yu, J. Kim, H. T. Kim, H. J. Cha, N. Pathak, C. M. Kim, K. H. Pae, J. Lee

14:00 T3-2 *Apollon-10P: Status and Implementation*
C. LeBlanc (Invited)**,** G. Chériaux , P. Georges , J. P. Zou , G. Mennerat , F. Druon , D. Papadopoulos, A. Pélégrina, P. Ramirez, F. Giambruno, A. Fréneaux, F. Leconte, D. Badarau, J. M. Boudenne, P. Audebert, D. Fournet, T. Valloton, J. L. Paillard, J. L.Veray, M. Pina, P. Monot, P. Martin, F. Mathieu, J. P. Chambaret, F. Amiranoff

14:30 T3-3 *Temporal Contrast above 10^{11} with Double CPA Technique*
M. P. Kalashnikov, G. Priebe, H. Schönagel, W. Sandner

14:45 T3-4 *Generation of High-Contrast, Petawatt-Class Laser Pulses with a OPCPA/Ti:sapphire Hybrid Laser System using a Double CPA and a Double Saturable Absorber*
H. Kiriyama, T. Shimomura, H. Sasao, Y. Nakai, M. Tanoue, S. Kondo, S. Kanazawa, A. S. Pirozhkov, M. Mori, Y. Fukuda, M. Nishiuchi, M. Kando, S. Bulanov, K. Nagashima, M. Yamagiwa, K. Kondo, A. Sugiyama, P. R. Bolton, T. Tajima, N. Miyanaga

15:00 T3-5 *The BELLA System and Facility*
W. P. Leemans (Invited), A. Deshmukh, R. Duarte, Z. Eisentraut, D. S. Fournier, A. J. Gonsalves, D. Lockhart, G. Sanen, T. Stezelberger, D. Syversrud, Cs. Toth, N. Ybarrolaza, S. Zimmermann

15:30 T3-6 *Technology Breakthroughs for High Repetition Rate PetaWatt Ti:Sa Lasers*
S. Laux, F. Lureau , O. Casagrande, C. Radier, O. Chalus, F. Caradec, C. Derycke,
C. Simon-Boisson

15:45 Coffee break

Novel Technologies for Ultra-Intense Lasers – R. X. Li (Chair)

16:15 T4-1 *Design and Realization of a Spectral Filter to Compensate Spectral Gain Distortions in Apollon-10P Ti:Sa Amplifiers*
F. Giambruno, A. Freneaux, G. Chériaux

16:30 T4-2 *High Contrast PW Ti:sapphire Laser with a Combined Scheme of DCPA and NOPA*
Z. Wang, C. Liu, Z. Shen, Q. Zhang, H. Han, **Z. Wei**

16:45 T4-3 *DiPOLE: A Scalable Pump Laser for Multi-Hz Petawatt Systems*
S. Banerjee, K. Ertel, P. D. Mason, P. J. Phillips, J. Greenhalgh, J. L. Collier

17:00 T4-4 *5-Cycle, 160 kHz, 2W, CEP Stable Mid-IR OPCPA*
M. Hemmer, A. Thai, M. Baudisch, Hideki Ishizuki, T. Taira, **J. Biegert**

17:15 T4-5 *High-Damage-Threshold Beam Shaping using optically Patterned Liquid Crystal Devices*
C. Dorrer, K. L. Marshall, S. H. Chen, M. Vargas, M. Statt, S. K.-H. Wei, J. B. Oliver, P. Leung, K. Wegman, J. Boulé, Z. Zhao

17:30 T4-6 *Design and Status of an Energy Upgrade to the Multi-Terawatt Laser at the University of Rochester's Laboratory for Laser Energetics*
J. D. Zuegel, I. A. Begishev, S.-W. Bahk, J. Bromage, D. D. Meyerhofer

17:45 T4-7 *Phase-Stabilized Few-Cycle Optical Parametric Amplification in the Mid-Infrared with 10 μJ at 100 kHz*
J. Nillon, **S. Montant**, G. Machinet, E. Cormier

18:00 T4-8 *Scaling the Pulse Energy of CPA Thin Disk Lasers to the Joule Level*
I. Will, G. Erbert, R. Jung, J. Tümmler, Th. Nubbemeyer, W. Pittroff, R. Platz, W. Sandner

Poster Session I

TP1: *IR Grade Fused Silica for High-Power Laser Applications*
F. Nürnberg, M. Altwein, B. Kühn, M. Stamminger, R. Takke

TP2: *Laser Damage Threshold of Optical Materials and Components for High Intensity Lasers*
F. Elsmann, R. Jedamzik, C. Bernheim, S. George, T. Jaeger, A. Nesci

TP3: *ARC Grating Statistics*
J. A. Britten, H. T. Nguyen, M. D. Aasen, T. C. Carlson, C. R. Hoaglan, C. C. Larson, J. D. Nissen, J. E. Peterson

TP4: *Contrast Characterization and Enhancement on the Orion Short Pulse Beam Lines*

D. I. Hillier, T. Bett, C. Danson, S. Duffield, S. Elsmere, D. Egan, M.T. Girling, E. Harvey, N. Hopps, D. Hoarty, D. Hussey, M. Norman, S. Parker, P. Treadwell, D. Winter

TP5: *Uniform Illumination and Space-Charge–Broadening Calibration for Accurate Short-Pulse Measurement using a High-Speed Streak Camera*
J. Qiao, P. A. Jaanimagi, R. Boni, J. Bromage, E. Hill

TP6: *Spatial and Temporal Coherent Phasing with a Femtosecond Laser for a Mosaic of Two Beams*
P. J. Phillips, I. Musgrave, C. Hernandez-Gomez, W. Shaikh, J. Collier

TP7: *Diagnostics for Pulse Characterization of 400 TW SCARLET Laser*
C. Willis, P. Poole, S. Jiang, S. Feister, K. George, F. Aymond, R. L. Daskalova, **E. Chowdhury**, R. R. Freeman

TP8: *Novel Pulse Cleaning Technique for CPA High Power Lasers*
Y. Tang, B. Parry, O. V. Chekhlov, S. Hawkes, P. P. Rajeev, J. Collier, C. J. Hooker

TP9: *Simulation of a Highly Stable Broadband Optical Parametric Amplifier under Pump Depletion*
A. K. Sharma, R. K. Patidar, P. A. Naik, P. D. Gupta

TP10: *High Efficiency and High Damage Threshold Diffraction Gratings for Ultrashort Petawatt Pulse Compression*
A. Cotel, A. Liard, Y. Bernard, F. Desserouer

TP11: *Phase and Spectrum Control Requirements of High Intensity Laser Beam Combining*
Y. Gao, W. Ma, B. Zhu, Z. Cao, J. Zhu, Y. Dai

TP12: *Hollow Beam Creation with Continuous Diffractive Phase Mask at PHELIX*
C. Brabetz, U. Eisenbarth, O. Kester, T. Stoehlker, B. Zielbauer, V. Bagnoud

TP13: *Combined Adaptive Optical System for Wavefront Correction and Focus Optimisation in High Power Lasers*
A. Alexandrov, A. Kudryashov, A. Rukosuev, **V. Samarkin**, Yu. Sheldakova

TP14: *Development of a Tiled Pulse Compressor for 50 TW Hybrid OPCPA based Nd:Glass Laser System*
A. K. Sharma, D. Daiya, R. K. Patidar, M. Raghuramaiah, A. S. Joshi, P. A. Naik, P. D. Gupta

TP15: *Grism Compressor for CEP-Stable mJ-Energy CPA Lasers Featuring Bulk Material Stretcher*
A. Ricci, A. Jullien, N. Forget, V. Crozatier, P. Tournois, R. Lopez-Martens

TP16: *Influence of Amplified Spontaneous Emission on Gain Lifetime in High-Aperture Ti:sapphire Amplifiers*
V. Yanovsky, K. Krushelnick

TP17: *Focal Spot Correction using Mechanical Deformable Mirror and Phase Retrieval Algorithm*
N. Lefaudeux, X. Levecq, L. Escolano, S. Theis

20:00 Dinner Buffet

Wednesday, 19 September 2012

7:30 – 8:30 Breakfast

Spatial, Temporal, and Contrast Characterization - K. Osvay (chair)

8:30 W1-1 *Characterization of Highly Dispersive Components using Direct Instantaneous Frequency Measurements*
C. Dorrer

8:45 W1-2 *A compact Temporal-Contrast Boosting Module for the PHELIX Petawatt Laser Facility*
F. Wagner, V. Bagnoud, J. Fils, T. Gottschall, J. Hein, C. Joao, J. Körner, J. Limpert, T. Stöhlker

9:00 W1-3 *Latest Results on Ultra High Dynamic Third Order Cross-Correlator for 10^{-14} Ultra High Contrast Laser*
P. M. Paul, F. Canova, F. Falcoz, G. Riboulet, L.Vigroux, P. Leroy, P. Monot

9:15 W1-4 *Investigation of the Contrast Pedestal in Femtosecond Ti:sapphire Laser Pulses*
C. Hooker, Y. Tang, O. Chekhlov, P. P. Rajeev, J. Collier

9:30 W1-5 *Optifocus: A Reference-Free Focal Spot Optimization Method using Adaptive Optics*
U. Eisenbarth, C. Brabetz, C. Lempa, T. Stöhlker, V. Bagnoud

9:45 W1-6 *Intensity and Contrast Improvements of the Diode-Pumped Laser System POLARIS*
M. Hornung, R. Bödefeld, S. Keppler, A. Kessler, C. Matzdorf, A. Sävert, J. Polz, O. Jäckel, M. Hellwing, F. Schorcht, J. Hein, M.C. Kaluza

10:00 Coffee break

Technology Development for Improving Laser Components - J. Crane (Chair)

10:30 W2-1 *An Improved Cleaning Method to Enhance the Damage Threshold of MLD Gratings*
H. P. Howard (Invited), A. F. Aiello, J. G. Dressler, N. R. Edwards, T. J. Kessler, A. A. Kozlov, S. LaDelia, J. C. Lambropoulos, I. R. T. Manwaring, K. L. Marshall, K. Mehrotra, J. B. Oliver, S. Papernov, A. L. Rigatti, A. W. Schmid, C. C. Smith, B. N. Taylor, S. D. Jacobs

11:00 W2-2 *High-Damage-Threshold Coating Design and Characterization for Short-Pulse Laser*
J. D. Shao (Invited)

11:30 W2-3 *Laser Damage and Ablation in Ultrashort Pulsed Regime:Test Bench, Measurements and Applications*
O. Utéza, R. Clady, N. Sanner, M. Sentis

11:45 W2-4 *Optical Coatings for Ultra-Intense OPCPA Systems*
J. Bromage, J. B. Oliver, C. Dorrer, J. D. Zuegel

12:00 W2-5 *Pulse-width Dependent femto-second Laser Damage Threshold Measurements for Substrate Etched Pulse Compression Gratings*
P. Poole, **E. Chowdhury**, R. R. Freeman, D. Smith

12:15 W2-6 *Large Scale Deformable Mirror Based on Bimorph and Stack Actuators*
A. Alexandrov, A. Kudryashov, A. Rukosuev, P. Romanov, **V. Samarkin**

12:30 Lunch

Novel Technologies for Ultra-Intense Lasers - R. Lopez-Martens

13:30 W3-1 *High-Energy Diode-Pumped Burst-Mode fs-Laser with Cryogenic Cooling*
J. Hein, J. Körner, H. Liebetrau, M. Kahle, R. Seifert, D. Klöpfel, M. C. Kaluza

13:45 W3-2 *Hybrid (Solid/Gas) Blue-Green fs Laser Systems: Proof-of-Principle Experiments*
S. Alekseev, A. Aristov, Ya. Grudtsin, S. Stepanov, D. Protasenja, A. Polivin, N. Ivanov, B. Kovalchuk, V. Losev, S. Mamaev, G. Mesyats, **L. Mikheev**,Yu. Panchenko, N. Ratakhin, M. Sentis, V. Trofimov, O. Uteza, V. Tcheremiskin , V. Yalovoy

14:00 W3-3 *XPW Generation of High-Fidelity few-cycle Pulses at 2 μm*
A. Ricci, F. Silva, A. Jullien, S. Cousin, N. Forget, D. Austin, J. Biegert, R. Lopez-Martens

14:15 W3-4 *Development of Novel Optical Probes for the Vulcan Petawatt Facility.*
I. O. Musgrave, R. J. Clarke, R. Heathcote, C. Hernandez-Gomez, M. Galimberti, J. Green, D. Neely, T. B. Winstone, J. Collier

14:30 W3-5 *Current Status of the LFEX Laser*
Y. Nakata, T. Kawasaki, H. Murakami, K. Sawai, N. Morio, S. Matsuo, Y. Fujimoto, K. Tsubakimoto, T. Jitsuno, J. Kawanaka, H. Shiraga, S. Fujioka, K. Shigemori, N. Miyanaga

14:45 W3-6 *Adaptive Optics Loop Implementation and Optimization for Petawatt Laser Facilities*
I. Doudet, B. Wattellier

15:00 W3-7 *An Anamorphically Imaged Programmable Beam-Shaping System for High-Power Lasers*
S.-W. Bahk, J. D. Zuegel

15:15 W3-8 *1 J, 100 Hz, Sub-ns DPSSL Development using Cryogenic Yb:YAG/YAG Composite Ceramics for OPCPA*
H. Furuse, J. Kawanaka, R. Yasuhara, N. Miyanaga, K. Matsumoto, T. Kawashima, H. Kan

15:30 Coffee break

Attosecond Science, Short Wavelength Sources, Plasma Compression/ Plasma Optics - Z.Y.Wei (Chair)

16:00 W4-1 *Attosecond Pulses from Plasma Mirrors*
R. Lopez-Martens (Invited)

16:30 W4-2 *Oscillator-Regenerative Laser Cavity Frequencies Tuning for Efficient Soft-X-ray Laser Operation*
O. Delmas, K. Cassou, O. Guilbaud, S. Kazamias, S. Daboussi, M. Pittman, O. Neveu, J. Demailly, D. Ros

16:45 W4-3 *Laser-based Betatron and Compton X-Ray Beams*
A. Rousse, S. Corde, C. Thaury, V. Malka, K. Ta Phuoc, S. Fourmaux, J.C. Kieffer, R. Shah

17:00 W4-4 *LASERIX: An European Intense Laser Facility For Devlopments of Soft X-Ray Lasers and EUV Sources for Applications*
D. Ros, S. Kazamias, O. Guilbaud, K. Cassou, S. Daboussi , M. Pittman, O. Neveau, J. Demailly, B. Cros, G. Maynard, Ph. Zeitoun and al.

17:15 W4-5 *X-Ray Lasers Pumped with 1 Long and 2 Short Pulses*
D. Ursescu, R. A. Banici, G. V. Cojocaru, R. Dabu, H. Stiel

17:30 W4-6 *Plasma-Field Structures in Ultra-Relativistic Circularly Polarized Laser-Plasma Interactions due to Radiation Reaction Effects*
A. V. Bashinov, A.V. Kim

17:45 W4-7 *High-aspect-ratio Plasma Target for Raman Backscattering in Exawatt Laser Development*

V. Yanovsky, F. Dollar, A. Maksimchuk, J. Nees, A. Thomas, K. Krushelnick

Poster Session II

WP1: *Proton Acceleration to 40 MeV using a High Intensity, High Contrast 200 TW Ti:Sapphire Laser System*
M. Nishiuchi, K. Ogura, A. S. Pirozhkov, T. Tanimoto, A. Sagisaka, T. Esirkepov, M. Kando, H. Kiriyama, T. Shimomura, S. Kondo, S. Kanazawa, Y. Nakai, H. Sasao, Y. Fukuda, H. Sakaki, M. Kanasaki, A. Yogo, S. V. Bulanov, P. R. Bolton, K. Kondo

WP2: *Progress on Experimental Studies on Laser-driven Plasma based Electron Acceleration at RRCAT, India*
A. Moorti, B. S. Rao, J. A. Chakera, P. A. Naik, P. D. Guptandia

WP3: *Spatio-Temporal Evolution of Megagauss Magnetic Fields in Intense Laser Matter Interactions Relevant to Fast Ignition*
G. Chatterjee, P. K. Singh, N. Booth, O. Culfa, R. Dance, L. Gizzi, R. J. Gray, P. Koester, J. Pasley, G. R. Kumar, A. P. L. Robinson, N. C. Woolsey, P. P. Rajeev

WP4: *MW Peak Power Diode-Pump Engines for Pulsed Solid-State Lasers with High Brightness*
J. Hein, J. Körner, S. Jirak, T. Töpfer

WP5: *Construction of SCARLET Laser System for Reaching beyond 10^{21} Wcm^{-2}*
E. Chowdhury, C. Willis, P. Poole, S. Jiang, S. Feister, K. George, F. Aymond, John Marketon, R. L. Daskalova, R. R. Freeman

WP6: *Temperature Dependence of the Emission Cross-Section of Yb-doped Ceramic Materials from 298K to 393K*
K. Izuno, K. Ishizaki, T. Kenmotsu, M. Wada, H. Kiriyama

WP7: *10 mJ Diode-pumped Yb:KY(WO4)2 Regenerative Amplifier for Optical Parametric Amplifier Pumping*
P. João, F. Wagner, J. Körner, H. Liebetrau, M. Kahle, R. Seifert, J. Hein, T. Gottschall, J. Limpert, G. Figueira, V. Bagnoud

WP8: *Fabrication of Off-Axis Parabolas for Ultra-Intense Lasers*
F. Tinker, K. Xin, T. Mikami

WP9: *Optimization of the Large Aperture multi-pass Amplifiers for CPA Lasers by Extraction during Pumping (EDP)*
V. Chvykov, K. Krushelnick

WP10: *Design of Multi-PW Non-Linear Thomson Scattering Experiments*
D. Ursescu, L. Ionel

WP11: *Efficiency Modeling of End-Pumped CW Quasi-Three-Level Lasers*
K. Ishizaki, K. Izuno, T. Kenmotsu, M. Wada, H. Kiriyama

WP12: *On Mismatched Spectral Overlap in a Nd:glass Regenerative Amplifier for Better Temporal Contrast*
P. Deb, K. C. Gupta, N. Jha

WP13: *Observation of Oscillations in The Plasma Critical Surface*
P. K. Singh, G. Chatterjee, A. Adak, A. D. Lad, S. Ahmed, G. R. Kumar

WP14: *A Compact Laser Driven Plasma Accelerator for MeV Energetic Neutral Atoms*
R. Rajeev, T. M. Trivikram, K. P. M. Rishad, V. Narayanan, E. Krishnakumar, **M. Krishnamurthy**

WP15: *Multiple Ultrashort Pulses Generation and Related Experiments*
D. Ursescu, R. A. Banici, C. Blanaru, G. V. Cojocaru, R. Dabu, L. Ionel, L. Neagu, S. Simion, R. Ungureanu, H. Stiel

WP16: *Terahertz Generation by Nonlinear Mixing of Laser Pulses in a Clustered Gas*
M. Kumar, V. K. Tripathi

WP17: *Development of High Intensity Few-Cycle Laser*
K. Sueda, J. Ogino, T. Kurita, T. Kawashima, N. Miyanaga

WP18: *Electron Beams Generation by Laser Wakefield Acceleration in Tapered Capillaries*
B. Ciocarlan, S. M. Wiggins, S. Abuazoum

20:00 Dinner Buffet

Thursday, 20 September 2012

7:30 – 8:30 Breakfast

IZEST Talk, Extreme Light Overview Talk, Applications with Extreme Light - C. Barty

8:30 Th1-1 *Coherent Combination of fs Pulses from Fiber Amplifiers*
T. Zhou, L. Siiman, W. Chang, **A. Galvanauskas** (Invited)

9:00 Th1-2 *High Average Power Fiber Laser Systems and Diode Pumping for Accelerator Applications*
J. Dawson (Invited), J. Crane, M. Messerly, M. Prantil, P. Pax, A. Sridharan, G. Allen, D. Drachenberg, H. Phan, J. Heebner, C. Ebbers, R. Beach, E. Hartouni, C. Siders, T. Spinka, C.P.J. Barty, A. Bayramian, C. Haefner, F. Albert, H. Lowdermilk, S. Rubenchik, G. Bonanno

9.30 Th1-3 *Energy and Average Power Scaling of Chirped-Pulse Amplifiers*
L. E. Zapata, E. Granados, K. H. Hong, F. X. Kärtner

9:45 Th1-4 *Diode-Pumped 1.2 Ps Mode-Locked Nd3+-Doped Mixed Scandium Garnets Ceramic Laser*
A. Kosuge, H. Okada, H. Kiriyama, K. Nagashima, T. Yanagitani, H. Yagi, N. Meichin

10:00 Coffee break

10:30 Th2-1 *IZEST and the Intensity Frontier*
T. Tajima (Invited)

11:00 Th2-2 *Overview of ELI Project*
G. Korn (Invited)

11:30 Th2-3 *Experimental Study of Laser Radiation Propagation in Cubic Nonlinear Medium with Linear Birefringence*
M. S. Kuzmina, E. A. Khazanov, A. A. Shaykin, A. N. Stepanov

11:45 Th2-4 *Ionization Dynamics of Laser Driven Nanoclusters*
R. Rajeev, M. Dalui, M. T. Vikram, K. P. M Risad, **M. Krishnamurthy**

12:00 Th2-5 *Laser-Based High Energy Physics: Exa-Zettawatt Peak Power and Megawatt Average Power Pursuit*
G. Mourou (Invited)

12:30 Lunch

20:00 Dinner Buffet

Friday, 21 September 2012

7:30 – 8:30 Breakfast

Laser development in Romania – Toshiki Tajima (Chair)

8:30 F1-1 *50 Years of Laser Research in Romania (Department of Lasers)*
D. C. Dumitras (Invited)

9:00 F1-2 *Evolution of High-Power Femtosecond Lasers Capabilities in Romania*
R. Dabu (Invited)

9:30 F1-3 *Progress at the Multi-PW ELI-NP Laser Facility*
D. Ursescu

9:45 F1-4 *Material Processing by Ultrashort Laser Pulses*
M. Zamfirescu, M. Ulmeanu, C. Albu, F. Jipa, I. Anghel, S. Simion, A. Dinescu, R. Dabu

12:30 Lunch

20:00 Dinner Buffet

Saturday, 22 September 2012

7:30 – 8:30 Breakfast

Departures

INVITED TALKS	**24**
CONTRIBUTED TALKS	**59**
POSTERS	**35**