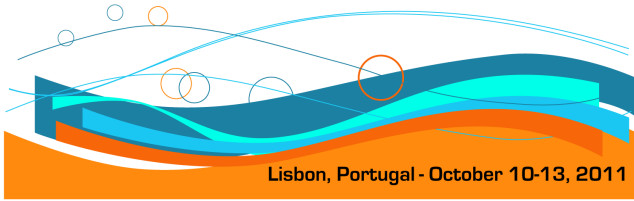


ULIS2011

3rd International Conference on

Ultraintense Laser Interaction Science



Lisbon, Portugal - October 10-13, 2011

Chairs:

Marta Fajardo, Gonalo Figueira, Lu s O. Silva
Instituto de Plasmas e Fus o Nuclear, Instituto Superior T cnico
Phone: +351 218 419 329 Web: <http://ipfn.ist.utl.pt>

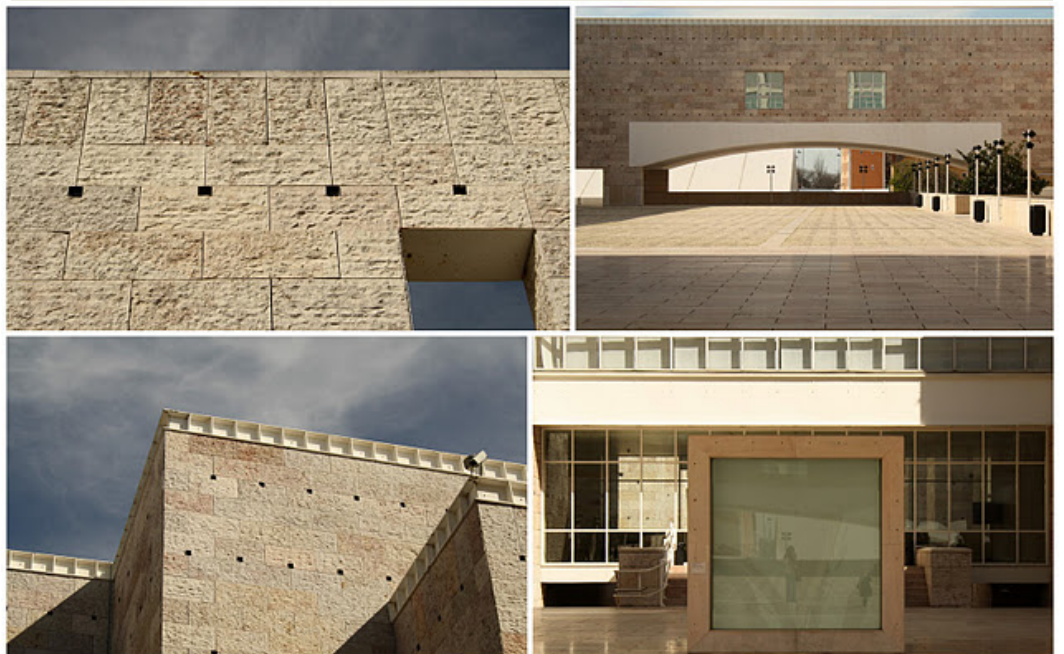
Report prepared by G. Figueira
E-Mail: goncalo.figueira@ist.utl.pt

ULIS 2011

3rd International Conference on
Ultraintense Laser
Interaction Science

Final Report

November 14, 2011



Summary

The third edition of the International Conference on Ultraintense Laser Interaction Science - ULIS2011 - took place in Lisbon, Portugal, from October 10th to 13th, 2011. The conference was hosted by the Institute for Plasmas and Nuclear Fusion (IPFN), a research unit of Instituto Superior Técnico (IST) - Technical University of Lisbon.

The ULIS series of conferences is aimed at researchers involved in experimental, numerical or theoretical studies on Strong Field or Ultra-High Intensity science (UHI) and Inertial Fusion for Energy (IFE), representing an outstanding opportunity to gather and compare their expertise and then to federate these communities. The success of ULIS 2007 and 2009 confirmed the necessity of a regular meeting on these complementary fields. Therefore, at the 2009 edition IPFN/IST researchers proposed to organize the current edition.

Topics

The topics of ULIS 2011 were:

- New Laser Sources: High Energy - High Power
- Fundamental Processes at Ultra-High Intensity
- Relativistic Optics in Plasmas
- Advanced IFE Schemes including Fast Ignition and Shock Ignition
- Laser-driven Particle Accelerators and their potential uses
- Secondary Sources, Applications and Radioprotection Issues
- Attosecond science

Preparation

The conference dates were chosen in order to avoid overlap with other conferences aimed at the same scientific audience that took place at the same time of the year, e.g. IFSA Bordeaux (Sep. 12-16), UFO Monterey (Sep. 25-30), FiO San Jose (Oct 16-20), LEI Szeged (Nov 14-18). The ULIS Scientific Committee was contacted in order to approve the dates and to suggest invited speakers (*see list below*) for the several topics.

A dedicated website was set up (<http://ulis2011.ist.utl.pt/>). This website provided up-to-date information about the conference, topics, committees, organizing team, program, etc and also allowed the registration of participants and abstract submission. The advanced abstract submission system allowed an automatic formatting of the papers for the Book of Abstracts, topic distribution, author indexing, paper reviewing and referee decision, etc.

The First and Second Calls for Papers for ULIS 2011 were widely distributed by the following channels:

- a specific mailing list gathered from previous conferences (>500 addresses);
- the mailing list of the European laser network LASERLAB Europe (26 research labs from 16 European countries);
- the mailing list of the Portuguese laser network RTLF (70);
- the internal mailing list of IPFN (150).

Additionally, the conference was promoted through the IPFN web and Facebook pages.

Abstract submission was open from July 15 to September 11 (extended deadline), with the paper acceptance being communicated on September 15.

Sponsoring

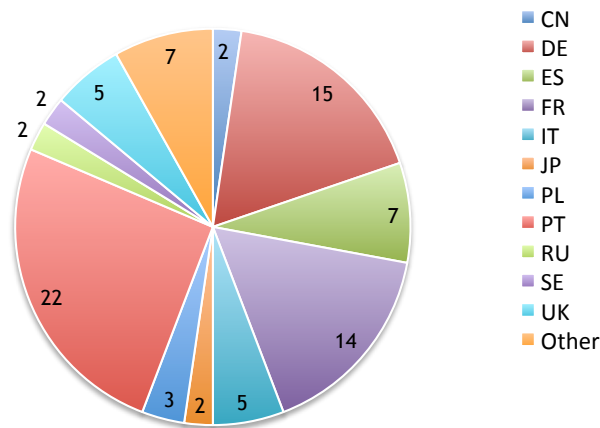
The organizing team requested financial support from SILMI, which was awarded. Support was also asked from private companies (laser and optics manufacturing and distribution) in the form of four levels of “commercial sponsorship”, allowing several levels of participation and representation at the conference. Despite the efforts, only one company (Amplitude Systèmes, France) became involved in the sponsoring.

Participants

A total of 86 participants attended the conference. Of these, 34 (~40%) were students, and the remaining were senior researchers or professors.

Participants came from a total of 18 countries from Europe and Asia. The largest participations were those from the host country (22 participants), followed by Germany (15), France (14) and Spain (7). The graph below shows the corresponding country distribution.

Some of the most relevant research institutions in this scientific area were well represented at the conference: MPQ Garching (DE), ICFO (ES), CEA, CELIA, LOA, LULI (FR), INFN Frascati, Politecnico di Milano (IT), GoLP/IPFN (PT), CLF, Imperial College (UK), among many others.



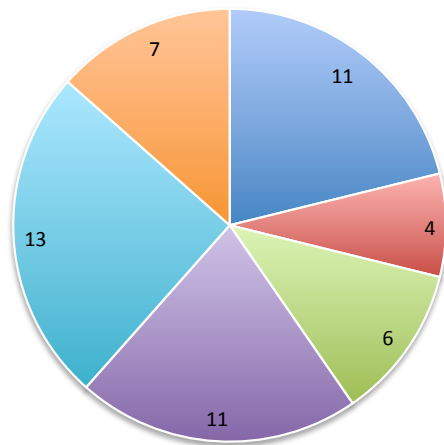
Participants by country

Contributions

A total number of 66 papers were presented at ULIS, distributed as follows:

- 26 invited talks
- 26 submitted talks
- 14 posters

The graph below shows the corresponding distribution per topic.



- New Laser Sources: High Energy – High Power
- Fundamental Processes at Ultra-High Intensity
- Advanced IFE Schemes incl. Fast Ignition and Shock Ignition
- Laser-driven Particle Accelerators and their potential uses
- Secondary Sources, Applications and Radioprotection Issues
- Attosecond Science

Submitted contributions by topic

Venue and accommodation

The chosen venue was the Centro Cultural de Belém (CCB) conference center - a first class infrastructure providing full logistic and technical support for high-level international events and meetings (<http://www.ccb.pt/sites/ccb/en-EN/CentrodeReunioes/Pages/default.aspx>). The conference room was “Sophia de Mello Breyner”, which was perfect for the number of participants.

Superbly located in the historically and monumentally rich Belém area, CCB is one of the top cultural destinations in Portugal. Participants were accommodated at the nearby Belém Jerónimos hotel, or at hotels near the city center.



Conference room at CCB (left). Photograph during one of the sessions (right).

Scientific impact

The conference represented an excellent forum for discussion and exchange of ideas. The topics of advanced laser technology, new laser sources, HHG, attosecond generation and laser acceleration were particularly lively, with several recent and new, unpublished results being presented at ULIS for the first time. These are topics directly relevant to the objectives of SILMI.

The participation of students was strongly encouraged, both locally and from foreign institutions - namely, by applying a very reduced registration fee (75 EUR) in these cases. While most of them opted for presenting a poster paper, in several cases students delivered a talk, and even a few invited talks (S. Corde, F. Fiúza, P. Heissler).



Picture of the conference participants

Committees

Conference chairs

Marta Fajardo	IPFN Lisbon	Portugal
Gonalo Figueira	IPFN Lisbon	Portugal
Luís Silva	IST Lisbon	Portugal

International program committee

Stefano Atzeni	U Roma	Italy
André Bandrauk	U Sherbrooke	Canada
Dimitri Batani	CELIA Bordeaux	France
Dimitrios Charalambidis	U Crete	Greece
Sandro De Silvestri	Politecnico Milan	Italy
Marta Fajardo	IPFN Lisbon	Portugal
Gonalo Figueira	IPFN Lisbon	Portugal
Antonio Giulietti	IPCF-CNR Pisa	Italy
Danilo Giulietti	U Pisa / INFN	Italy
Leonida Gizzi	INO-CNR	Pisa
Sylvie Jacquemot	LULI Palaiseau	France
Charles Joachain	UL Bruxelles	Belgium
Ruxin Li	SIOM CAS	China
Philippe Martin	CEA Saclay	France
Eric Mevel	CELIA Bordeaux	France
Katsumi Midorikawa	RIKEN	Japan
Luís Roso	CLPU Salamanca	Spain
Carl Schroeder	LBL	USA
Armin Scrinzi	LMU Muenchen	Germany
Luís Silva	IST Lisbon	Portugal
David Villeneuve	NRC	Canada
Claes-Goran Wahlström	U Lund	Sweden
Oswald Willi	U Duesseldorf	Germany
Kaoru Yamanouchi	U Tokyo	Japan

Invited speakers

- Amelle Zaïr (Imperial College, UK) (*could not attend*)
- Andrius Baltuska (Tech. Univ. Vienna, Austria) (*replaced by D. Kartashov*)
- Daniele Tommasini (Univ. Vigo, Spain)
- David Ros (Univ. Paris-Sud, France)
- Eric Cormier (CELIA, France)
- Fernando Brizuela (Lund Univ. Sweden)
- Frederico Fiúza (IST, Portugal)
- Gareth Williams (IST, Portugal)
- Hamed Merdji (CEA Saclay, France)
- Hélder Crespo (Univ. Porto, Portugal)
- Jesus Alvarez (UPM, Spain)
- Jiansheng Liu (SIOM, China)
- Julien Fuchs (LULI, France)
- Junji Kawanaka (ILE, Japan)
- Kazutaka G. Nakamura (Titech, Japan)
- Lucas Gallmann (ETH Zurich, Switzerland)
- Marco Galimberti (RAL, UK)
- Michaël Hemmer (ICFO, Spain)
- Paris Tzallas (FORTH, Greece)
- Patrick Heissler (MPQ, Germany)
- Petra Koester (INO-CNR, Italy)
- Rodrigo Lopez-Martens (LOA, France)
- Salvatore Stagira (Politecnico di Milano, Italy)
- Sébastien Corde (LOA, France)
- Sébastien Hulin (CELIA, France) (*replaced by D. Batani*)
- Toma Toncian (Univ. Dusseldorf, Germany)

Final program

Monday		Tuesday		Wednesday		Thursday	
8:30	Registration	8:30	Registration	8:30	Registration	8:30	Registration
8:50	OPENING						
9:00	Baltuska	9:00	Fuchs	9:00	Ros	9:00	Heissler
9:25	Kawanaka	9:25	Liu	9:25	Brizuela	9:25	Gallmann
9:50	Galimberti	9:50	Corde	9:50	Nakamura	9:50	Stagira
10:15	Khrenikov	10:15	Schnell	10:15	Ciappina	10:15	Gonoskov
10:30	Chekhlov	10:30	Zani	10:30	Andriyash	10:30	Vincenti
10:45	BREAK	10:45	BREAK	10:45	BREAK	10:45	BREAK
11:00	Tommasini	11:00	Salamin	11:00	Merdji	11:00	Zaïr
11:25	Kharin	11:25	Wenze	11:25	Williams	11:25	L. Martens
11:40	Utkin	11:40	Steinke	11:50	Fiedorowicz		Hulin
11:55	Lehmann	11:55	Badziak	12:05		11:55	CLOSING
12:10		12:10	Heigoldt	12:10	LUNCH		
	LUNCH		LUNCH				
14:00	Hemmer	14:00	Fiuza	14:00	Toncian		
14:25	Siebold	14:25	Alvarez	14:25	Tzallas		
14:40	João	14:50	Friou	14:50	Kiefer		
14:45	BREAK	15:05	Li	15:05	Fonseca		
15:20		15:20	Antici	15:20	Streeter		
15:35	Posters &	15:35	BREAK	15:35	BREAK		
16:00	Welcome	16:00	Koster	16:00	Crespo		
18:00	reception	16:25	Santos	16:25	Cormier		
				19:30	CONFERENCE		
				21:30	DINNER		

Invited talks

Title	Authors
The PETAL+ Project: Development of the diagnostics for the PETAL laser system	D. Batani, S. Bastiani, N. Blanchot, E. Brambrink, A. Casner, T. Ceccotti, S. Dobosz-Dufresnoy, J. E. Ducret, A. Duval, J. Fuchs, F. Gobet, S. Hulin, M. Koenig, I. Lantuejoul-Thfoin, J. R. Marquès, J. L. Miquel, C. Perego, C. Reverdin, L. Sérani, M. Tarisien, R. Wrobel
The Vulcan facility re-commissioning and future project	M. Galimberti
Advanced Technology for High-Energy, High-Field Lasers at Osaka University	J. Kawanaka, LFXE Team, GENBU Team, GEKKO EXA Team
XUV pump-probe studies in sub-fs time scale	P. Tzallas, E. Skantzakis, L. A. Nikolopoulos, G. D. Tsakiris, D. Charalambidis
Laser-Plasma Interaction Studies on Plane Targets in a Shock Ignition Relevant Regime	P. Koester, C. A. Cecchetti, L. Labate, T. Levato, A. Giuliotti, L. A. Gizzi, L. Antonelli, A. Patria, M. Kozlova, J. Nejd, M. Sawicka, D. Margarone, B. Rus, D. Batani, G. Schurtz, X. Ribeyre, M. Lafon, A. Moretti, M. Richetta, L. Giuffrida, L. Torrisi, C. Spindloe, T. O'Dell, S. Atzeni, A. Schiavi, A. Marocchino

Generation of high photon-flux HHG at Lund University	F. Brizuela, P. Rudawski, C. M. Heyl, J. Schwenke, A. L'Huillier
Pushing limits in the mid-IR - High average power, few-cycle OPCPA and applications	M. Hemmer, A. Thai, M. Baudisch, J. Biegert
All-Optical Spectroscopy for the Attosecond Domain	L. Gallmann, M. Holler, F. Schapper, U. Keller
Towards single attosecond pulses from relativistically oscillating mirrors	P. Heissler
Multi-scale PIC modeling of laser-plasma interactions in high density scenarios	F. Fiuza, R. A. Fonseca, L. O. Silva, J. Tonge, W. B. Mori
Latest developments in laser wakefield accelerators at SIOM	J. Liu, W. Wang, H. Lu, C. Xia, W. Cheng, M. Liu, A. Deng, W. Li, H. Zhang, J. Xu, X. Liang, Y. Leng, X. Lu, C. Wang, J. Wang, B. Shen, K. Nakajima, R. Li, Z. Xu
Probing dense plasma states with high order harmonics	G. Williams, M. Fajardo, S. Kunzel, P. Zeitoun, A. Barszczak, J. Gautier, G. Dovillaire, P. Mercère, J. Dunn, R. Shepherd, A. Graf, R. Lee, A. Steel, J. Park, J. Wark, S. Vinko, O. Ciricosta, C. Blancard, M. Cammarata, D. Fritz, D. Milathianaki, H. J. Lee, B. Nagler, P. Audebert, A. Levy, M. Gauthier, J. Fuchs, H.K. Chung, C. Fourment, F. Deneuille
Molecular internal dynamics studied by quantum path interferences within high order harmonic generation	A. Zaïr, T. Siegel, S. Sukiasyan, C. Hutchison, P. Salieres, M. Ivanov, J. Marangos
Measurement of magnetic field dynamics in dense plasmas irradiated by short pulse lasers	B. Albertazzi, P. Antici, J. Bocker, S. Chen, V. Dervieux, L. Lancia, M. Nakatsutsumi, H. Pépin, L. Romagnagni, M. Swantusch, O. Willi, M. Borghesi, J. Fuchs
Ultra high repetition rate, few cycles CEP stabilized source at 2 microns for strong field physics	J. Nillon, S. Montant, G. Machinet, E. Cormier
Attosecond control of collective electron motion in laser-driven plasmas	A. Borot, A. Malvache, X. Chen, P. Audebert, J.-P. Geindre, G. Mourou, F. Quéré, R. Lopez-Martens
Ultrafast nanoscale imaging using high order harmonic generation	H. Merdji
LASERIX: an open facility for developments of soft X-ray and EUV lasers and applications	D. Ros, S. Kazamias, O. Guilbaud, K. Cassou, S. Daboussi, M. Pittman, J.-C. Lagron, B. Cros, G. Maynard, Ph. Zeitoun
Testing QED and new physics models by searching for light by light diffraction at Ultraintense Lasers	D. Tommasini
Application of Ultraintense Lasers to validate materials for laser fusion: production of ions and other relevant species	J. Alvarez, D. Garoz, K. Mima, A. Ribera, R. Gonzalez-Arrabal, J.M. Perlado, K.A. Tanaka, K. Kikuyama, T. Kono, Y. Hirooka, I. Ashikawa, K. Kondo, M. Nishiuchi, T. Tanimoto, P. Alexander
Recent progresses in Betatron Radiation from Laser-Plasma Accelerators	S. Corde, K. Ta Phuoc, R. Fitour, J. Faure, C. Thauray, A. Lifschitz, G. Lambert, O. Lundh, E. Benveniste, A. Ben-Ismaïl, L. Arantchouk, A. Marciniak, A. Stordeur, P. Brijesh, A. Specka, V. Malka, A. Rousse
Generation of high harmonics from corrugated targets irradiated at relativistic intensities	T. Toncian, M. Cerchez, A.L. Lindemann, C. Peth, M. Toncian, B. Albertazzi, J. Fuchs, O. Willi
Optical control of coherent phonons in superconductors	K. G. Nakamura
High order harmonics driven by infrared parametric sources: applications to attosecond science and molecular orbital tomography	C. Vozzi, M. Negro, F. Calegari, F. Frassetto, K. Kovacs, C. Altucci, R. Velotta, M. Nisoli, L. Poletto, G. Sansone, P. Villoresi, V. Tosa, S. De Silvestri, S. Stagira



Contributed talks

Title	Authors
Investigating contrast improvement of Astra-Gemini Laser	O. V. Chekhlov, C. J. Hooker, Y. Tang, S. Hawkes, K. Ertel, J. Collier, P.P. Rajeev
Temporal contrast management in high intensity/energy laser systems	K. Khrennikov, P. Heissler, D. Jung, K. Allinger, J. Bin, J. Wenz, M. Heigoldt, S. Major, F. Krausz, S. Karsch, J. Schreiber
PEneLOPE - a high peak-power laser system for laser-particle acceleration experiments	M. Siebold, M. Loeser, F. Roeser, U. Schramm
Experimental evidence of anomalous stopping power in warm dense matter	A. Morace, H. Sawada, S. Hulin, X. Vaisseau, Ph. Nicolaï, F. N. Beg, D. Batani, A. Sorokovikova, J. Bonlie, S. Chawla, S. Kerr, R.Gray, L. C. Jarrott, K. Li, P. McKenna, J. Peebles2, Y. Rhee, H. McLean, M. Wei, R. Fedosejevs, J. J. Santos
10 mJ-level diode-pumped Yb:KYW regenerative amplifier at picosecond regime for OPA pumping	C. P. João, J. Körner, M. Kahle, H. Liebetrau, R. Seifert, M. Lenski, S. Pastrik, J. Hein, T. Gottschall, J. Limpert, G. Figueira, V. Bagnoud
Vibrational-rotational dynamics of diatomic heteronuclear molecules in intense femtosecond laser pulses	V. Yu. Kharin, A. M. Popov, O. V. Tikhonova
Transient electromagnetic waves accompanying propagation of ultra-intense radiation in media	A. B. Utkin
Energy gain of an electron by a laser pulse in the presence of radiation reaction	G. Lehmann, K. H. Spatschek
Channeling dynamics of relativistic-intensity laser pulses	A. Friou, E. Lefebvre, L. Gremillet
Bremsstrahlung Radiations from Various Targets and High/Low Contrast Laser Pulses	K. Li, C. D. Chen, R. H. Scott, J. R. Davies, L. O. Silva
Influence of target areal density and target composition on ion acceleration in the light sail regime	S. Steinke, P. Hitz, M. Schnuerer, F. Abicht, J. Braenzel, A. A. Andreev, D. Kiefer, J. Schreiber, W. Sandner
Characterizing the electron-beam size from a laser-plasma electron accelerator with betatron radiation	M. Schnell, A. Sävert, B. Landgraf, M. Reuter, M. Nicolai, O. Jäckel, C. Peth, T. Thiele, O. Jansen, A. Pukhov, O. Willi, M. C. Kaluza, C. Spielmann
Steps to improvement of maximum energy in ultraintense laser-driven proton acceleration	A. Zani, T. Ceccotti, D. Dellasega, A. Sgattoni, A. Macchi, M. Passoni
Direct laser acceleration of ions for medical and industrial applications	Y. I. Salamin, B. J. Galow, Z. Harman, C. H. Keitel
Efficient generation of high-energy ion bunches via cavity-enhanced radiation pressure	J. Badziak, S. Jablonski, P. Raczka
Bunch profile retrieval of laser accelerated electron bunches by single-shot measurement of coherent transition radiation	M. Heigoldt, S. Bajlekov, A. Popp, J. Wenz, K. Khrennikov, S. Chou, F. Krausz, S. M. Hooker, S. Karsch
Beam shaping of laser-generated particles with conventional accelerator devices	P. Antici, L. Lancia, M. Migliorati, A. Mostacci, L. Picardi, C. Ronsivalle, L. Palumbo
Diffraction of relativistic electron beam on a high intensity optical lattice as a new approach to the X-ray generation	I.A. Andriyash, Ph. Balcou, E. d'Humieres, V.T. Tikhonchuk
High-order harmonic generation tailored using non-homogeneous fields	M. F. Ciappina, J. Biegert, R. Quidant, M. Lewenstein
Efficient second harmonic generation from relativistic plasma surfaces	M J V Streeter
Gas puff targets for ultra-short, high-intensity laser-matter interaction experiments	H. Fiedorowicz, A. Bartnik, R. Jarocki, J. Kostecki, M. Szczurek, P. Wachulak
Coherent Thomson Scattering from Relativistic Electron Mirrors	D. Kiefer, M. Yeung, T. Dzelzainis, P. Foster, B. Qiao, J. Schreiber, D. Habs, M. Zepf, B. Dromey

Hard X-ray production from metallic targets in air using GW high repetition laser pulses	C. Fonseca, C. Méndez, D. Bote, F. Fernández, L. Roso
Hard X-Ray Experiments from LWFA electrons	J. Wenz, A. Buck, S. Schleede, K. Khrennikov, M. Heigoldt, F. Pfeiffer, F. Krausz, L. Veisz, S. Karsch
Giant attosecond pulse generation at ultrarelativistic laser-plasma interaction	A.A. Gonoskov, A.V. Korzhimanov, A.V. Kim, M. Marklund, A.M. Sergeev
Attosecond lighthouses	H. Vincenti, F. Quéré

Posters

Title	Authors
High Energy Diode Pumped Cryogenic Yb doped YAG Ceramic Amplifier for Extreme Science	S. Banerjee, K. Ertel, P. Mason, J. Phillips, C. Hernandez-Gomez, J. Collier
Multi-PW laser-driven plasma accelerators as betatron radiation sources	J.L. Martins, J. Vieira, S.F. Martins, R.A. Fonseca, L.O. Silva
Exciting Weibel modes from Stimulated Raman Scattering	M. Hoshino, A. Stockem, L. O. Silva
Efficient Plasma heating by ultra-short laser pulses	N. Lemos, J. Berardo, N. Lopes, G. Figueira, F. Fiuza, R.C. Issac, D. A. Jaroszynski, L. O. Silva, J. M. Dias
A novel XUV wavefront sensor using the Talbot effect	S. Künzel, G. W. Williams, M. Fajardo, G. Figueira
Magnetic field assisted self-injection in plasma based acceleration	J. Vieira, S. F. Martins, V. B. Pathak, J. L. Martins, R. A. Fonseca, W. B. Mori, L. O. Silva
Radiation reaction and gamma-ray production in colliding pulse configurations	Marija Vranic, Joana L. Martins, Jorge Vieira, Ricardo A. Fonseca, Luis O. Silva
Selective Phase-matching For Generation of Few High Order Harmonics in Ionic Media	J.Jiang, C.Russo, R. Bendoyro, M. Fajardo, G. Figueira, N. C. Lopes
Numerical evaluation of yttrium calcium oxyborate for ultrabroadband OPCPA	H. Pires, M. Galimberti, G. Figueira
Long plasma channels for laser wake-field accelerators	Rodolfo Bendoyro, Jiasheng Jiang, Carlos Russo, Jorge Vieira, Gonçalo Figueira, Nelson Lopes
Pulse Duration and Intensity Effects in Nonlinear Compton Scattering	M. Boca, V. Dinu, V. Florescu
Properties of X-ray radiation emitted by electron acceleration on 100TW class-laser facility	S. Dobosz-Dufrenoy, A. André, P. Monot, Ph. Martin
Carbon ions and protons acceleration with ultra-thin foils	T. Ceccotti, V. Floquet, S. Dobosz-Dufrenoy, F. Reau, O. Tcherbakoff, P. D'Oliveira, J.M. Morin, M. Bougeard, P. Monot, Ph. Martin
Gamma ray source by all optical driven Compton interaction	G. Gatti, M. A. Anania, G. Bussolino, G. Cristoforetti, L. Labate, T. Levato, N. Pathak, A. Macchi, D. Alesini, P. Antici, M. Ferrario, A. Ghigo, S. Martellotti, A. R. Rossi, C. Vaccarezza, P. Londrillo, A. Sgattoni, S. V. Bulanov, T. Z. Esirkepov, M. Kando, K. Kondo, A. S. Pirozhkov, F. Pegoraro, L. A. Gizzi

Local organizing team

Marta Fajardo, Gonçalo Figueira, Luís O. Silva,
Luís Cardoso, Mauro Henriques,
Paulo Abreu, Celso João, Swen Künzel, Hugo Pires,
Paulo Ratinho, Jorge Vieira, Gareth Williams

<i>Coordination and scientific program</i>	MF, GF, LOS
<i>Finance and logistics</i>	MH
<i>Website and databases</i>	LC, GF, PR
<i>Communications</i>	LC, MF, GF
<i>Abstract classification</i>	JV
<i>Book of Abstracts</i>	PA, LC, GW
<i>Session support</i>	LC, CJ, SK, HP, GW
<i>Conference material</i>	MH
<i>Design</i>	GF