



Conference Program

ICOPS 2008

The 35th IEEE International Conference on Plasma Science

June 15–19, 2008
Karlsruhe, Germany

Sponsored by:
Plasma Science and Applications Committee of
The IEEE Nuclear and Plasma Sciences Society



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ICOPS 2008

35th IEEE International Conference on Plasma Science
June 15-19, 2008
Congress Center Karlsruhe, Germany



WELCOME TO ICOPS 2008 IN KARLSRUHE, GERMANY

We wish to extend a cordial welcome to ICOPS 2008, the 35th IEEE International Conference on Plasma Science, sponsored by the Plasma Science and Applications Committee of the IEEE Nuclear and Plasma Sciences Society. ICOPS 2008 will be held in Karlsruhe, Germany from June 15-19, 2008. The conference venue is the Congress Center in Karlsruhe.

This is the second time that the ICOPS Conference has been held outside the USA, following the initial event in Jeju, Korea, in 2003.

Plasma science covers a wide range of topics, both fundamental and applied. The technical program of the ICOPS 2008 Conference will cover progress in the seven conference topics (1) basic processes in fully and partially ionized plasmas, (2) microwave generation and plasma interactions, (3) charged particle beams and sources, (4) high energy density plasma applications, (5) industrial, commercial and medical plasma applications, (6) plasma diagnostics, (7) pulsed power and other plasma applications.

We would like to thank the many scientists and engineers who are attending the ICOPS 2008. A very strong technical program has been assembled with 619 papers from 42 countries demonstrating the broad international character of research in these fields. Plenary talks (7) will start every morning and afternoon, followed by five parallel sessions including invited (59) and contributed presentations (231). Poster sessions will be held on June 16, 17 and 18 (322 posters).

Wednesday (June 18) starts with the 2008 PSAC Award Plenary Talk on “Laser-Pumped X-Ray Free Electron Laser” given by Dr. P. Sprangle. On Thursday afternoon (June 19) there will be a laboratory visiting tour to the Research Center Karlsruhe.

If you enjoy browsing industrial exhibits, you will be pleased to learn that the poster sessions will be held in the Foyer which also serves as exhibit hall and we expect approximately a dozen industrial exhibitors to present their late technologies and products.

The minicourse for ICOPS 2008 also reflects the scientific environment in Karlsruhe: Microwave Processing of Materials.

Karlsruhe is a hospitable city, in the State of Baden-Württemberg, located in the upper Rhine valley between the wooded mountains of the Black Forest, the vineyards of the Palatinate (Pfalz), and the Vosges in France with a mild climate. Heinrich Hertz conceived and performed his brilliant fundamental experiments confirming Maxwell's theory at the University of Karlsruhe (1886–1888). The University of Karlsruhe (founded in 1825) has close scientific and academic relations to the Karlsruhe Research Center (Forschungszentrum Karlsruhe, founded in 1957) with the aim of merging to become the Karlsruhe Institute of Technology (KIT).

All of us who helped to organize ICOPS 2008 sincerely hope that all participants will enjoy the Conference. We also hope that participants will be able to enjoy the scenic Karlsruhe area. Finally, we are looking forward to a very successful ICOPS/SOFE 2009 which will be held from May 31 – June 5, 2009 in San Diego, California.

Manfred Thumm
Chair, ICOPS 2008

Hansjoachim Bluhm
Co-Chair, ICOPS 2008

Günter Dammertz
Program Chair, 2008

Ronald Gilgenbach
Chair, PSAC/ExCom of IEEE NPSS

2008 NUCLEAR AND PLASMA SCIENCES SOCIETY

Administrative Committee

President	Jane M. Lehr
Vice President	Craig Woody
Secretary	Alberta M. Dawson Larsen
Treasurer	Edward J. Lampo
Most Recent Past President	William W. Moses
Division IV Director	Edward Della Torre

Plasma Science and Applications Committee, Executive Committee

Chairman	Ronald M. Gilgenbach
Vice Chairman	John Luginsland
Secretary	Steven H. Gold
Past Chairman	Dan Jobe
Editor-in-Chief of TPS	Steven Gitomer

Elected Administrative Committee Members

Terms Expiring 2008

Uwe Bratzler
Christopher Deeney
Ronald J. Jaszczak

Terms Expiring 2009

Daniel M. Fleetwood
Anthony L. Peratt
Robert E. Reinovsky
Stefan Ritt
Craig L. Woody

Terms Expiring 2010

Sandra G. Biedron
Eric Frey
James Shwank
Rick Van Berg

Terms Expiring 2011

David K. Abe
Janet L. Barth
Dillon H. McDaniel
Hutch Neilson

Elected Executive Committee Representatives

Terms Expiring 2008

Monica Blank
Mark Gilmore
Trevor Moeller
Andrew Ng
Steven Shannon
Robert Vidmar

Terms Expiring 2009

Paul Chu
Brendan Godfrey
Neville Luhmann, Jr.
Gregory Nusinovich
Joseph Schumer
Ryan Umstattd

Terms Expiring 2010

Rickey Faehl
Tim Grotjohn
Richard Hubbard
Don Shiffler
Mary Ann Sweeney
Paul Woskov

ICOPS 2008

Conference Sponsors and Supporters:

Plasma Science and Applications Committee of the IEEE Nuclear and Plasma Sciences Society



The Karlsruhe Research Center
(Forschungszentrum Karlsruhe, FZK)



The University of Karlsruhe (TH)



Karlsruhe Institute of Technology
The Cooperation of Forschungszentrum Karlsruhe GmbH
and Universität Karlsruhe (TH)



The IEEE NPSS Society



German IEEE Section NPSS Chapter



The European Office of Aerospace Research & Development
(EOARD)

ICOPS 2008 Conference Web Site:

www.icops2008.org

Future ICOPS Conferences:

ICOPS / SOFE 2009

San Diego, CA, May 31 – June 5, 2009

Farhat Beg – fbeg@ucsd.edu

ICOPS 2010

Norfolk, VA, June 20 – 24, 2010

Mounir Laroussi – mlarouss@odu.edu

ICOPS/SOFE 2009
 36th International Conference on Plasma Science
 and 23rd Symposium on Fusion Engineering
 May 31 – June 5, 2009
 Omni Hotel, San Diego, California USA

ICOPS 2009 SOFE
 SAN DIEGO, CALIFORNIA

Conference website: <http://cer.ucsd.edu/icopssofe09>
 E-mail address: icopssofe@cer.ucsd.edu

ICOPS Conference Chair Farhat Beg University of California, San Diego	SOFE Conference Chair Mark Tillock University of California, San Diego	Local Organizing Chair Dan Goodin General Atomics
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ICOPS 2010
37th IEEE Int. Conf. on Plasma Science
June 20-24, 2010
Marrriott Waterside
Norfolk, Virginia, USA

IEEE

CONFERENCE CHAIR: MOURIR LAROUSSE
Old Dominion University
<http://www.eng.odu.edu/icops2010>

NUCLEAR & PLASMA SCIENCES SOCIETY

PREVIOUS ICOPS CONFERENCES

1974	University of Tennessee	Knoxville, TN	I. Alexeff
1975	University of Michigan	Ann Arbor, MI	R.R. Johnson
1976	University of Texas	Austin, TX	E.J. Powers
1977	Rensselaer Polytechnic Institute	Troy, NY	R.L. Hickok
1978	Doubletree Inn	Monterey, CA	R. Schwirzke
1979	Universite de Montreal	Montreal, Canada	C. Richard
1980	University of Wisconsin	Madison, WI	J.L. Shohet
1981	Sweeney Convention Center	Santa Fe, NM	S.J. Gitomer
1982	Carleton University	Ottawa, Canada	A.J. Alcock
1983	Sheraton Harbor Island Hotel	San Diego, CA	J.L. Luxon
1984	Clarion Hotel	St. Louis, MO	T.J. Menne
1985	Pittsburg Hilton Hotel	Pittsburg, PA	M.D. Nahemow
1986	Ramada Renaissance Hotel & Bessborough Hotel	Saskatoon, Canada	A. Hirose
1987	Hyatt Regency Crystal City	Arlington, VA	F.C. Young
1988	Seattle Sheraton Hotel	Seattle, WA	L.C. Steinhauer
1989	Hyatt Regency	Buffalo, NY	D.M. Benson
1990	Hyatt Regency	Oakland, CA	J.N. Benford
1991	College of William and Mary	Williamsburg, VA	K.H. Schoenbach
1992	Hyatt Regency Westshore	Tampa, FL	N.L. Oleson
1993	Sheraton Landmark Hotel	Vancouver, Canada	A. Ng
1994	Sweeney Convention Center	Santa Fe, NM	A.L. Peratt
1995	University of Wisconsin	Madison, WI	J.E. Scharer
1996	Boston Park Plaza Hotel	Boston, MA	C. Chan
1997	Catamaran Resort Hotel	San Diego, CA	J. Hyman
1998	North Raleigh Hilton	Raleigh, NC	J. Gilligan
1999	Doubletree Hotel	Monterey, CA	C. Deeney
2000	Fairmont Hotel	New Orleans, LA	M. Mazzola
2001	Rio Hotel and Convention Center	Las Vegas, NV	T. Hussey
2002	Banff Centre for Conferences	Banff, Canada	R. Fedosejevs
2003	Lotte Hotel	Jeju, Korea	K.-S. Chung
2004	The Hyatt Regency-Baltimore	Baltimore, MD	R.J. Commisso
2005	Portola Plaza and Conference Center	Monterey, CA	R.C. Cauble
2006	Grand Traverse Resort and Spa	Traverse City, MI	J. Asmussen
2007	Albuquerque Convention Center	Albuquerque, NM	E. Schamiloglu

ICOPS 2008 CONFERENCE COMMITTEES

Conference Executive Committee

Chair

Manfred Thumm

Forschungszentrum Karlsruhe
and
University of Karlsruhe

Co-Chair

Hansjoachim Bluhm

Forschungszentrum Karlsruhe

Conference Managers

Gabriela Bertsch

Forschungszentrum Karlsruhe

Martina Huber

Forschungszentrum Karlsruhe

Treasurer

Georg Müller

Forschungszentrum Karlsruhe

Minicourse Co-Chair

Lambert Feher

Forschungszentrum Karlsruhe

Conference Abstracts

Stefan Illy

Forschungszentrum Karlsruhe

Exhibition

Wolfgang Frey

Forschungszentrum Karlsruhe

Poster Sessions

Bernhard Piosczyk

Forschungszentrum Karlsruhe

Laboratory Visits

Guido Link

Forschungszentrum Karlsruhe

Companion Program

Manuela Wettstein

Forschungszentrum Karlsruhe

Technical Program Committee

Chair

Günter Dammertz

Forschungszentrum Karlsruhe

Technical Area Chairs

Klaus-Dieter Weltmann

INP Greifswald

Mingh Quang Tran

EPFL Lausanne

Vladimir Engelko

NIIIEFA St. Petersburg

Dieter H.H. Hoffmann

GSI Darmstadt

Mounir Laroussi

Old Dominion University

Bruce Weber

NRL Washington D.C.

Hidenori Akiyama

Kumamoto University

LIST OF TOPICS AND SESSION ORGANIZERS

Session Area	Organizer	Email	Phone
Basic Processes in Fully and Partially Ionized Plasmas	K-D. Weltmann INP Greifswald	weltmann@inp-greifswald.de	+49 3834 554 311
1.1 Basic Phenomena	A. Fruchtman H.I.T. Israel	fnfrucht@hit.ac.il	+972 3 5026617
1.2 Computational Plasma Physics	C.-D. Munz U Stuttgart	munz@iag.uni-stuttgart.de	+49 711 685 3433
1.3 Space Plasmas	R. Schlickeiser U Bochum	rsch@tp4.rub.de	+49 234 32 22032
1.4 Partially Ionized Plasmas	I. Alexeff U Tennesy	alexeff@mail.ee.utk.edu	+1 865 974 5467
1.5 Dusty Plasmas	A. Melzer U Greifswald	melzer@physik.uni-greifswald.de	+49 3834 86 4790
Microwave Generation and Plasma Interactions	M. Q. Tran EPFL Lausanne	minhquang.tran@epfl.ch	+41 21 693 3482
2.1 Intense Beam Microwave Generation	A.D.R. Phelps U Strathclyde	a.d.r.phelps@strath.ac.uk	+44 141 5483166
2.2 Fast-Wave Devices	J.-P. Hogge EPFL Lausanne	jean-philippe.hogge@epfl.ch	+41 21 693 5497
2.3 Slow-Wave Devices	D. Whaley L-3 Communications	david.whaley@L-3com.com	+1 650 591 8411
2.4 Vacuum Microelectronics	J. Booske U Wisconsin-Madison	booske@engr.wisc.edu	+1 608 262 8548
2.5 Codes and Modeling	T. Antonsen U Maryland	antonsen@umd.edu	+1 301 405 1635
2.6 Non-Fusion Microwave Systems	G.G.Denisov IAP Nizhny Novgorod	den@appl.sci-nnov.ru	+7 8312 365810
2.7 Microwave Plasma Interaction	A. Lunk U Stuttgart	lunk@ipf.uni-stuttgart.de	+49 711 68562499
Charged Particle Beams and Sources	V. Engelko NII-EFA St. Petersburg	engelko@niiefa.spb.su	+7 812 464-4608
3.1 Plasma, Ion and Electron Sources	Y. Krasik Technion Israel	fnkrasik@physics.technion.ac.il	+972 4 8293666
3.2 Intense Electron and Ion Beams	G. Müller FZK	georg.mueller@ihm.fzk.de	+49 7247 82 4669
High Energy Density Plasmas and Applications	D. H.H. Hoffmann GSI Darmstadt	d.hoffmann@gsi.de	+49 6159 712664
4.1 Fusion - Inertial, Magnetic and Alternate Concepts	C. Deutsch U Paris Sud II	claude.deutsch@pgp.u-psud.fr	
4.2 Particle Acceleration with Laser and Beams	A. Ulrich TU München	andreas.ulrich@ph.tum.de	+49 89 289 12442
4.3 Radiation Physics	B. Jones Sandia National Lab	bmjones@sandia.gov	+1 505 284 9481
4.4 High Energy Density Matter	S. Rose U Oxford	s.rose1@physics.ox.ac.uk	+44 1865 282639
4.5 Laser Produced Plasmas	A. Pukhov U Düsseldorf	pukhov@thphy.uni-duesseldorf.de	+49 211 81 10777
4.6 Fast Z-Pinches, X-Ray Lasers	M. Cuneo Sandia National Lab	mecuneo@sandia.gov	+1 505 845 8767

LIST OF TOPICS AND SESSION ORGANIZERS

Session Area	Organizer	Email	Phone
Industrial, Commercial and Medical Plasma Applications	M. Laroussi U Old Dominion	mlarouss@odu.edu	+1 757 683 6369
5.1 Nonequilibrium Plasma Applications	M.G. Kong U Loughborough	m.g.kong@lboro.ac.uk	+44 1449 227075
5.2 High-Pressure and Thermal Plasma Processing	J. Heberlein U Minnesota	jvrh@umn.edu	+1 612 625 4538
5.3 Plasma Thrusters	M. Auweter-Kurtz U Hamburg	praesidentin@hvn.uni-hamburg.de	+49 40 42838 4475
5.4 Plasmas for Lighting	P. Flesch OSRAM GmbH	p.flesch@osram.de	+49 30 3386 2120
5.5 Flat-Panel Displays	K. Blankenbach FH Pforzheim	karlheinz.blankenbach@hs-pforzheim.de	+49 7231 28 6658
5.6 Medical, Biological and Environmental Applications	M. Laroussi U Old Dominion	mlarouss@odu.edu	+1 757 683 6369
Plasma Diagnostics	B. Weber NRL Washington D.C.	bruce.weber@nrl.navy.mil	+1 202 767 8373
6.1 Optical and X-ray Diagnostics	J. Bailey Sandia National Lab	jebaile@sandia.gov	+1 505 845 7203
6.2 Microwave and FIR Diagnostics	G. Conway IPP MPG	Garrard.Conway@ipp.mpg.de	
6.3 Particle Diagnostics	Ch. Li MIT	ckli@mit.edu	+1 617 253 0934
Pulsed Power and Other Plasma Applications	H. Akiyama U Kumamoto	akiyama@eecs.kumamoto-u.ac.jp	+81 96 342 3808
7.1 Insulation and Dielectric Breakdown	J. Dickens U Texas Tech	jdickens@coe.ttu.edu	+ 1 806 742 1254
7.2 Switching	G.-H. Rim KERI	gkrim@keri.re.kr	+82 55 280 1450
7.3 Plasma Lasers	A. Goertler Coherent GmbH	andreas.goertler@coherent.com	+49 89 89407214
7.4 Compact Pulsed Power and Applications	W. Jiang Nagaoka University	jiang@nagaokaut.ac.jp	+81 258 47 9892

CONFERENCE LOCATION

Congress Center Karlsruhe
 (Karlsruher Messe-
 und Kongress-GmbH)
 Festplatz 9
 76137 Karlsruhe
 Phone: +49 721 3720-0
 Fax: +49 721 3720-2106
 E-mail: info@kmsg.de
www.messe-karlsruhe.de



ICOPS 2008 will be held in the Congress Center Karlsruhe. Karlsruhe has approximately 300,000 inhabitants, and 200,000 of them only came to the city during the last century. The city was

founded when Margrave Karl Wilhelm built his palace here in 1715. His tomb on the market square is roofed with a large vaulted stone pyramid which is now Karlsruhe's emblem. From the palace, the streets of the inner-city fan out with the palace tower — which can be climbed — as their focal point. It was the intention of its founding father that the palace should be visible from any point in the city. Karlsruhe has plenty to offer: — from its elite university to the Research Center with the Karlsruhe Institute of Technology, the ZKM or the Art Gallery: Architecture, art, universities and colleges, future technologies, music, restaurants and a delight in just being alive all combine to make an impressive whole. Karlsruhe is blessed by the sun which you can enjoy in the palace gardens or in one of the innumerable beer gardens.

Karlsruhe is an inviting place to visit. The city with its radial layout features an interesting and unique connection of technology, art, education and culture. Enjoy the extensive cultural and gastronomic offerings in the second warmest city of Germany.

The Congress Center Karlsruhe has reserved a sufficient number of rooms at a reduced rate in hotels located within walking distance of the Congress Center Karlsruhe for ICOPS 2008 participants.

A link for booking and a hotel reservation form will be provided by January 2008 (see Conference Website). In case of questions, please contact:

Tourismus office
 Phone: +49 721-3720 5383
 E-mail: tourismus@kmsg.de
 Please refer to the group name of ICOPS2008.

INSTRUCTIONS FOR SPEAKERS

Oral presentations

All Conference Rooms for oral presentations will have a computerized LCD projector (data projector). Be present at least 10 minutes before the start of your session, and inform the session chairman of your arrival.

Time schedules for talks are as follows:

Plenary talks:	60 minutes (50 min. for presentation plus 10 min. for discussion)
Invited talks:	30 minutes (25 min. for presentation plus 5 min. for discussion)
Contributed talks:	15 minutes (12 min. for presentation plus 3 min. for discussion)

Strongly recommended

Speakers should bring only a Compact Disk or a USB-Memory-Stick with the presentation files in “.ppt” (PowerPoint) or “.pdf” (Adobe) format. Speakers should upload and preview their presentations on our presentation server in the “Prescreening Area” up to one hour before the session is scheduled to start. In each Conference Room an assistant and a notebook computer will be available for the presentations.

Prescreening Area

Location: Ground floor, near the Poster Session Area

Available time for pre-screening:

Sunday, June 15:	17:00 – 20:00
Monday, June 16:	07:30 – 16:00
Tuesday, June 17:	07:30 – 16:00
Wednesday, June 18:	07:30 – 16:00
Thursday, June 19:	07:30 – 09:00

Poster Presentations

Posters should have a maximum height of 1.2 m and width of 0.9 m (dimension in feet: 3.94 by 2.95). Posters should be set at 09:00 o'clock on the poster session day (Poster Session 1P on Monday, June 16 or Poster Session 2P on Tuesday, June 17 or Poster Session 3P on Wednesday, June 18) and taken down at 18:00 o'clock on the same day. The presenter is expected to remain at the poster during the time allotted for the poster session and the afternoon coffee break.

Times of the poster sessions:

Monday, June 16, at the following time:	13:00 - 14:00, 15:30 - 18:00
Tuesday, June 17, at the following time:	13:00 - 14:00, 15:30 - 18:00
Wednesday, June 18, at the following time:	13:00 - 14:00, 15:30 - 18:00

PUBLICATIONS

The Conference Record will be a USB memory stick. Manuscripts of plenary and invited oral presentations can be submitted for a special issue of the IEEE Transactions on Plasma Science to be published in early 2009.

OFFICIAL LANGUAGE

The official language of the Conference is English, which should be used in all printed materials, presentations, and discussions.

REGISTRATION DESK

Conference materials will be distributed at the Registration Desk in the Foyer of the Congress Center Karlsruhe.

The locations and opening hours of the desk are as follows:

Sunday, June 15:	17:00 – 20:00
Monday, June 16:	07:30 – 17:30
Tuesday, June 17:	07:30 – 17:30
Wednesday, June 18:	07:30 – 17:30
Thursday, June 19:	07:30 – 12:00

COFFEE BREAK

Coffee, tea, refreshments and snacks will be available in the Foyer of the Congress Center Karlsruhe during the coffee breaks.

INTERNET CAFE

10 PCs for Internet access, LAN ports and Wireless LAN will be provided in the Internet Café at the Congress Center Karlsruhe. Please bring your own PC if you wish to use the LAN ports. Internet access will be free for everyone attending the conference. The room will be open during the following dates and times:

Sunday, June 15:	17:00 – 20:00
Monday, June 16:	07:30 – 17:30
Tuesday, June 17:	07:30 – 17:30
Wednesday, June 18:	07:30 – 17:30
Thursday, June 19:	07:30 – 12:00

WIRELESS ACCESS AT THE CONGRESS CENTER KARLSRUHE

Wireless Internet access is provided at the Conference free of charge. When searching for W-Lan Accesspoints you may choose any list entry with leading text "ICOPS" followed by any combination of two numbers.

The corresponding SSIDs are: **ICOPSXX**

The Wireless Access is not encrypted.

EXHIBITION

An Exhibition will be held concurrently with the Conference in the Foyer of the Congress Center Karlsruhe during the following dates and times:

Monday, June 16:	08:00 – 18:00
Tuesday, June 17:	08:00 – 18:00
Wednesday, June 18:	08:00 – 18:00
Thursday, June 19:	08:00 – 12:00

Exhibitors:

Diamond Materials GmbH
Fraunhofer ICT
Guth GmbH
Int. Plasma Research Center
LeCroy Europe GmbH
Parzich GmbH
PCO AG
PTL Kapra
Rohde&Schwarz Vertriebs GmbH
Tech-X Corporation
Tektronix GmbH
Virginia Diodes Inc
Voss Scientific

BEST STUDENT PAPER AWARDS

The “Best Student Presentation Awards” were established in 2005 by the IEEE Nuclear and Plasma Sciences Society.

The purpose of these awards is to encourage both outstanding student contributions and greater student participation as principal or sole authors of papers as well as to acknowledge the importance of student contributions to the fields embraced by the NPSS umbrella.

The two best submissions (two awards) will receive cash awards of € 450 each and a Certificate. The two runners-up will receive a only certificate.

Any student who is the principal or sole author/researcher and the presenter of either an oral or poster paper at the ICOPS 2008 conference and who has been identified as an eligible student author will be eligible. If there is a tie, preference will be given 1) to IEEE NPSS members, 2) to IEEE members; 3) to non-IEEE members.

All candidates for selection must have identified themselves at the time of abstract submission. Upon notification of acceptance of the abstract, the award candidate should arrange to have his/her advisor or research supervisor provide an endorsement of the work to the awards committee (contact details will be provided at a later date). At the conference, the on-site awards committee will rank the papers for technical content and originality first. Other criteria such as graphic display and clarity of data presentation may be considered.

For information contact:

Monica Blank
Communication and Power Industries, Palo Alto, CA, USA
E-mail: monica.blank@cpii.com

STUDENT TRAVEL GRANT

A limited number of travel grants are available to encourage students who are IEEE members to attend ICOPS 2008. Applicants should submit the following information by 29 February 2008.

- Copy of submitted abstract
- IEEE membership number
- Proposed travel budget to the conference (cost sharing with other students is encouraged)

Two letters of recommendation, one of which is from the student’s advisor, stating the importance of the research to be presented. Application information should be sent to:

John Luginsland
Numerex
401 East State Street #304
Ithaca, New York 14850
Fax: 607-697-0212
E-mail: ICOPSstudentTravel@ieee.org

PLACEMENT CENTER

A job placement center will be set up at the conference. Individuals interested in employment opportunities in plasma physics and related areas should send their resumes (marked "ICOPS") to the address below. Employers with plasma-related technical positions available should contact

Wolfgang Frey
Forschungszentrum Karlsruhe, IHM
Hermann-von-Helmholtz-Platz 1
76344 Eggenstein-Leopoldshafen
Phone: +49 7247 – 82 2453
E-mail: wolfgang.frey@ihm.fzk.de

William White
Z Operations Group
Ktech (Sandia National Laboratories)
P.O. Box 5800, MS 1192
Albuquerque, NM 87185
Phone: +1 505-844-0081
E-mail: wmwhite@ktech.com

This is a free service that has been a success at past ICOPS in hiring graduates into industry, academia and national laboratories.

REGISTRATION

	In Advance On or before 30 April 2008	On Site After 30 April 2008
IEEE Members	€ 400	€ 500
Non-members	€ 550	€ 650
Student Members	€ 110	€ 125
Student Non-members	€ 150	€ 175
Retired / Unemployed	€ 110	€ 125

Registration will be done online at the Website. The online registration facility will be activated by January 2008.

Affiliate members of the IEEE Nuclear and Plasma Science Society (NPSS) qualify of the lower Members rate. For membership information, contact IEEE Member Services at 800-678-IEEE.

REGISTRATION CANCELLATION POLICY

Registrants wishing to cancel their registrations may receive a refund if requested in writing to Georg Müller at Forschungszentrum Karlsruhe (georg.mueller@ihm.fzk.de). If the request is received by 1st May 2008, it will be processed without charge. A cancellation fee of € 80 will accrue for refund requests received after that date. Refund requests will not be honored after 15 May 2008.

MINICOURSE

Microwave Processing of Materials

As part of the International Conference on Plasma Science 2008 (ICOPS 2008), a special two-day minicourse on microwave processing technologies will be offered on Thursday June 19th and Friday June 20th. ICOPS 2008 will be held at the Congress Center Karlsruhe and the minicourse will be held at the Research Center Karlsruhe, Germany. A group of international experts from academia and industry will provide a set of comprehensive lectures on industrial microwave processing and systems, avionic applications, antennas, energy efficient waveguides and transmission devices as well as computational methods.

Microwave processing is extremely important for a variety of industrial applications. These include high performance materials used in automotive, aerospace, electronic and medical applications, the chemical industry, environmental technologies, as well as advanced materials development and materials processing. This minicourse presents a unique opportunity to learn from leading, international microwave processing experts.

The course is structured in three sessions. A single session on the first day will cover some fundamentals of microwave processing technologies with a main focus on development, energy efficiency and devices.

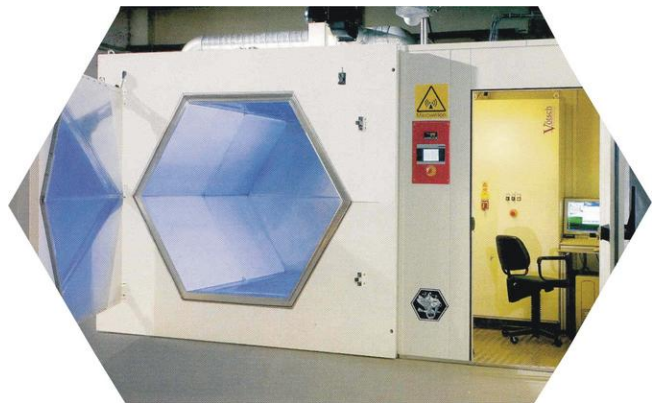
Two parallel sessions will run on the second day. These sessions will focus on avionic and automotive applications as well as on simulations and dielectric measurements.

Who should attend

The course is designed for engineers/scientists from industry and research, technicians, and graduate level engineering/science students with an interest in applied microwave technologies and applications. At the same time, for the audience, the instructors will provide the most current information and will provide laboratory visits on the latest technology developments in their respective areas.

Minicourse Topics

- Industrial microwave systems
- Waveguides and transmission devices
- Avionic and automotive applications
- Microwave Chemistry
- Sintering of Materials
- Plasma and Nanomaterials Applications
- Dielectric measurements
- Electromagnetic Modelling and Simulation



More Information

Further information on minicourse registration fees, student tuition grants, and instructors will be posted on the conference website shortly.

For further information, contact

Lambert Feher

**Forschungszentrum Karlsruhe, IHM
Karlsruhe**

Phone: +49 7247 – 82 4330

Fax: +49 7247 – 82 6595

E-mail: lambert.feher@ihm.fzk.de



ICOPS 2008 MINI COURSE SCHEDULE

Session 1: Basics, Components and Technologies • June 19th, 2008		
08.00–09.30	Industrial Microwave Processing Introduction and Overview	L. Feher
09.30–11.00	Electromagnetic Heating Processing and Material Effects	M. Willert-Porada
11.00–12.30	Industrial Microwave Systems and Applications in Japan	M. Sato
12.30–13.00	Lunch	
13.30–15.00	Waveguides, Antennas and Dielectric Sensoring	J.M. Catalá
15.00–16.30	Microwave Plasma and Polymer Applications	R. Emmerich

Session 2: Dielectrics, Chemistry and Application • June 20th, 2008		
08.00–09.30	Dielectric Measurements and Methods	J. Akhtar
09.30–11.00	Microwave Curing of Resins and Composites	R. Day
11.00–12.30	Resin Chemistry and Microwave Enhancements	M. Henningsen
12.30–13.00	Lunch	
13.30–15.00	Microwave Treatment of Ceramics and Glasses	C. Leonelli
15.00–16.30	Microwave Plasma Processing of Nano-Materials	D. Szabó
17.00–18.00	Visit to HEPHAISTOS-Experimental Center	L. Feher

How to Register

The fee for the minicourse is € 400. For students, there is a reduced rate of € 200. This includes lunch and coffee breaks, 2 full day instruction from microwave processing experts plus course materials.

It is possible to register for the minicourse exclusively! It is not mandatory to sign up for the ICOPS conference to benefit from the minicourse.

Don't miss this unique opportunity to learn from internationally-recognized microwave processing experts. Register online at the ICOPS 2008 conference website. Registrations accepted through May 31, 2008.

Go to www.icops2008.org and choose "Registration". Select "Minicourse Registration" under the Fee section.

If you require more information about the course content, please contact lambert.feher@ihm.fzk.de.

If you require more information about registration, please contact Martina Huber at martina.huber@ihm.fzk.de.

Location

The minicourse will be held at the Congress Center Karlsruhe.

To book accommodation for a hotel, mention ICOPS 2008 to benefit from the reduced conference rate. For details on booking accommodation, please visit the ICOPS 2008 website — www.icops2008.org and click on accommodation/hotel booking link.

SOCIAL EVENTS

Welcome Reception

A welcome reception will be held Sunday 15 June from 5 to 9 pm. There is no charge for conference registrants and companions.

Reception at the Karlsruhe City Hall

At Monday 16 June evening there will be a reception by the mayor at the City Hall in Karlsruhe. There is no charge for conference registrants and companions.

In 1805, the city fathers decided to build a new Town Hall. Called upon to assist in putting the project into practice was Friedrich Weinbrenner who planned to include also the meat depot and the salt and flour hall inside the new building. Thus, facing the Evangelical Municipal Church, a building was constructed in Weinbrenner's typical neoclassical style.



Wine Tasting Evening



A wine tasting evening with local food will be organized at Tuesday 17 June at the vineyard Wilker in the Palatinate (Pfalz). Transportation will be by buses. There is no charge for registrants and companions.

Banquet

The conference banquet will be held Wednesday (18 June) evening, in the Schwetzingen Palace. A limited number of tickets is available. A nominal payment of €35 will be charged for conference registrants and companions which includes bus transportation from Karlsruhe to Schwetzingen and back. Tickets can be purchased during on-line registration and at the Registration Desk on a first-come basis.



LABORATORY VISIT

On Thursday afternoon (June 19th) **three visiting tours (A, B and C)** to the **Forschungszentrum Karlsruhe** will be organized. Forschungszentrum Karlsruhe is one of the biggest science and engineering research institutions in Europe and funded jointly by the Federal Republic of Germany and the State of Baden-Wuerttemberg. Its research and development program is embedded in the superordinate program structure of the Hermann von Helmholtz Association of National Research Centers and concentrates on the five research areas of Structure of Matter, Earth and Environment, Health, Energy, and Key Technologies.

Within groups of up to 25 participants you will be guided through 4 different laboratories. At the end of the tour there will be a short come together where drinks and snacks will be served.

You will be picked up by bus in front of the Conference Center at 14 o'clock and the way back will start at about 18:30 o'clock.

If you intend to participate you should indicate your interest in the registration form. This event is free of charge and will be limited to 300 participants on a first serve come basis.

You may choose one of the following tours at the registration desk.

Tour A:

GESA experiment for surface modification of materials by pulsed electron beams.

The Karlsruhe Microwave Plasma Process (**KMP Process**) for the production of nanoparticles with very narrow particle size distribution.

The Karlsruhe Tritium Laboratory (**TLK**) which develops key technologies for the deuterium / tritium fuel cycle of future fusion reactors.

The **KATRIN** experiment is designed to measure the mass of the electron neutrino directly with a sensitivity of 0.2 eV.

Tour B:

FRANKA facilities for fragmentation and separation of compound materials and minerals with pulsed electric discharges.

KEA experiments for a big scale utilization of pulsed power for electroporation of plant cells.

Test facility **TOSKA** for magnets utilized in fusion reactors for magnetic confinement.

Gyrotron laboratory for the development of high power microwave sources for plasma heating in fusion reactors.

The Synchrotron Light Source **ANKA**.

Tour C:

VERENA is an installation to convert biomass from agriculture and food industry into a hydrogen-rich product gas.

FR2 is the first genuine German nuclear research reactor which is located on the premises of the Research Center Karlsruhe. It was built from 1957 to 1960 and went critical for the first time in March 1961. The FR2 was finally shut down in December 1981.

MEKKA aims to investigate liquid metal flows relevant for fusion applications, where the magnetic field that confines the plasma is very strong.

BETINA is a research project on alloying of Beryllium and Titanium nanopowders.

COMPANION ACTIVITIES

The following tours for accompanying persons will be organized:

Monday 16 June: Historical Walk in Karlsruhe

We offer a guided tour of the city with a visit to the palace gardens, botanical gardens, orangery, and buildings along the Circle. The two highest German courts, the Federal Constitutional Court and the Federal Supreme Court, are located in Karlsruhe.



Tuesday 17 June: Sightseeing in Speyer



The tour will lead you to the venerable imperial town of Speyer on the river Rhine. The imperial cathedral, the construction of which started before 1030, is one of the most significant Romanesque buildings in Germany. The crypt that has been preserved nearly unchanged accommodates the graves of eight German emperors and kings. In 1981, the cathedral was included in the UNESCO list of world heritage sites. One of the most beautiful and highest town towers of Germany is the “Altpörtel”. A lunch and later

walk on Speyer’s shopping mall, the Maximilianstrasse, will complete your visit of the vital and hospitable town of Speyer.

Wednesday, 18 June: Heidelberg Tour

The tour will start with sightseeing at the castle of Heidelberg and the apothecary museum. Experience the Electors’ residence at the height of their power, and its destruction in the year 1689. Hear the fascinating story of the great love between the Winter King and the “Winter Queen”, Elizabeth Stuart, about the wine-bibbing dwarf Perkeo, and about Elisabeth Charlotte of the Palatinate, Duchess of Orléans, famous for her candid letters from the Sun-King’s court. Enjoy the historical charm of the romantic ruins above the Neckar River. A lunch and a walk to the shipping pier for a round trip on the Neckar river including coffee and cake make this tour to a highlight.



FREE INTRODUCTORY IEEE MEMBERSHIP

In order to encourage participation in the activities of the IEEE and the Plasma Science and Applications Section of the IEEE Nuclear and Plasma Science Society, free half-year memberships will be given to all interested non-IEEE members (including students) registering for this conference. This free half-year membership includes a subscription to IEEE Spectrum and Transactions on Plasma Science. The regular cost of a full year's membership can be found at www.ieee.org.

Membership includes:

1. Subscription to Transactions on Plasma Science, a journal devoted to all aspects of plasma science and technology.
2. Subscription to IEEE Spectrum, a magazine covering engineering topics of general technical, economic, political, and social interest.
3. Subscription to Society Newsletter with news items about the Conference on Plasma Science, the Particle Accelerator Conference, and the Symposium on Fusion Engineering.
4. Eligibility to participate in a broad range of IEEE activities.
5. Opportunities for IEEE educational services such as video-conferences and individual learning packages.

To receive our free membership, fill out an application at the Registration Desk or call 800-678-IEEE.

GETTING TO KARLSRUHE (more details see www.fzk.de/icops2008)

Travel by plane

Frankfurt Airport

Frankfurt Airport is located directly adjacent to the A 5 motorway, Frankfurt — Karlsruhe, about 1 hour and 15 minutes by car from Karlsruhe. The Deutsche Bahn AG offers rail connections to and from Karlsruhe from Frankfurt Airport and from Frankfurt Main Station. The Deutsche Bahn AG gives information about arrival and departure times.

Stuttgart Airport

Stuttgart Airport is situated directly adjacent to the A 8 motorway, Munich — Karlsruhe. About 1 hour by car from Karlsruhe. There is a local rail connection from Stuttgart Airport to Stuttgart Main Station.



Travel by train

Karlsruhe forms an important junction of the Deutsche Bahn (German national railway) and is situated directly on the ICE (high-speed train) route of Hamburg – Frankfurt – Basel. The east-west axis of Karlsruhe – Stuttgart – Munich starts here.

Travel by car

Karlsruhe lies directly at the A 5 motorway. The city center is less than ten minutes drive away from the exits for “Durlach” and “Karlsruhe Mitte” either via the Durlacher Allee or the round the southern by-pass.

A routing system — green signs with white lettering — assists new arrivals to find their booked or chosen hotel. In the same way, the parking guide system leads the way to the many multi-story car parks in the city center.



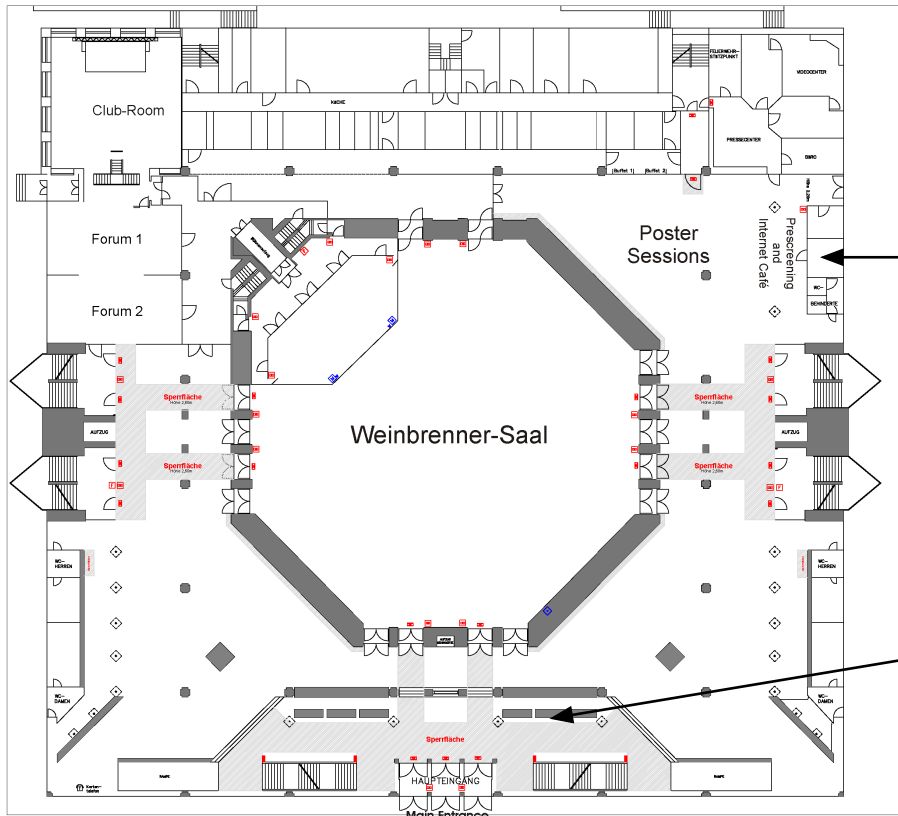
Map of Karlsruhe with Congress Center (KMK) and ICOPS Hotels

Free transport with the Karlsruhe Tram System (KVV) in the full KVV network is included in the conference fee for registered participants.

Your conference badge will serve as the ticket, which is valid from Sunday, June 15 to Friday, June 20.

Accompanying persons may purchase a tram ticket at the registration desk for € 20.

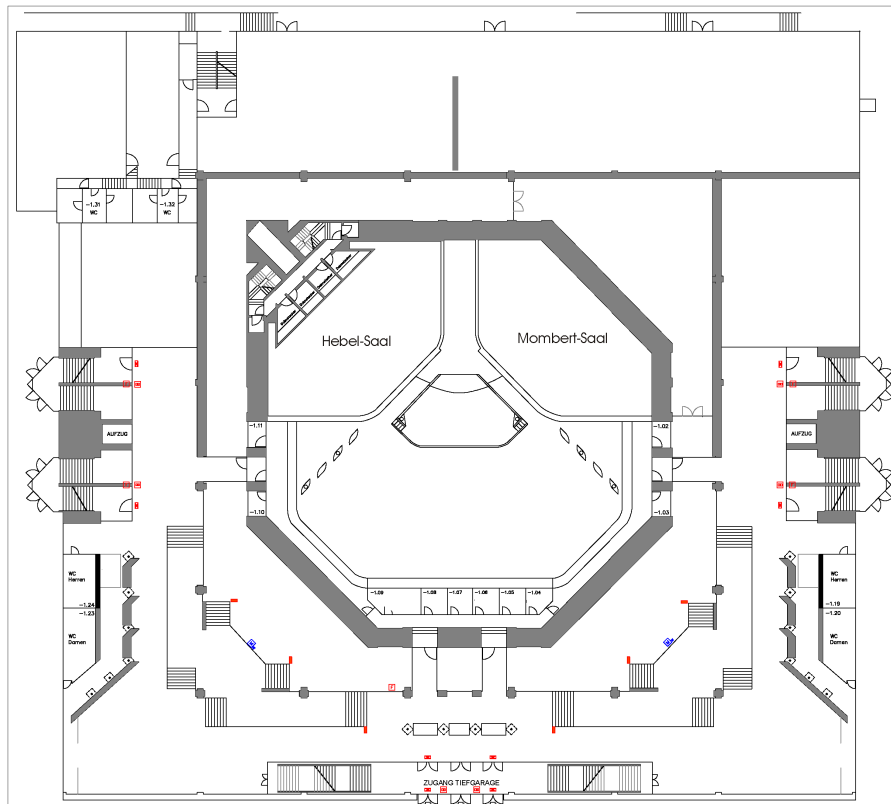
General Information



Ground Level

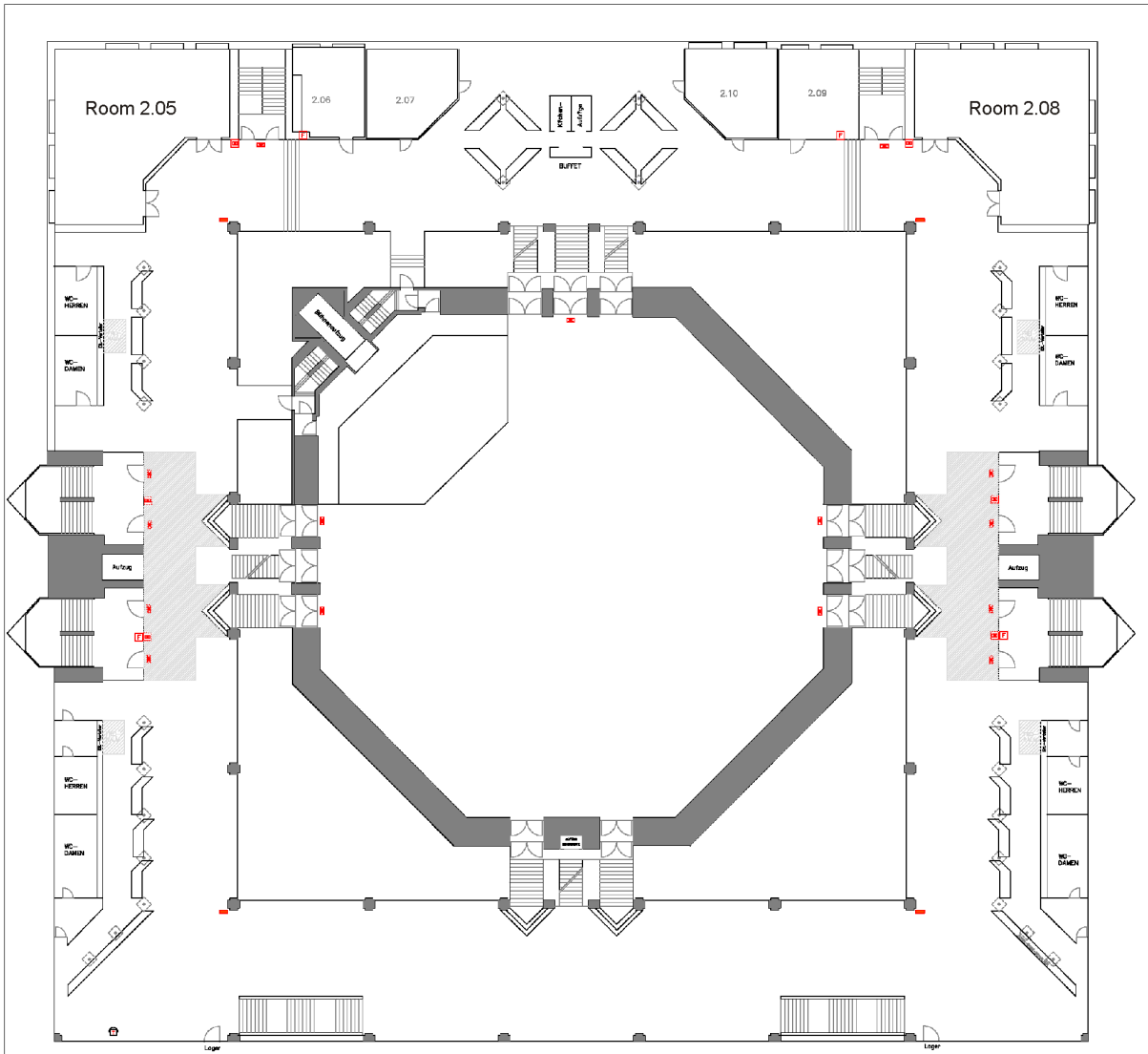
Prescreening and Internet Café

Registration Desk



Lower Level

Upper Level



Conference Timetable






















Sunday, June 15

17:00 – 21:00	Welcome Reception (Foyer)
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Monday, June 16

08:00 – 08:15	Opening Ceremony (Weinbrenner Saal)
08:15 – 09:15	Plenary Session PL1 (Weinbrenner Saal) <i>D.J. Campbell:</i> The Physics of ITER ☞ p. 34
09:15 – 09:30	Break (Foyer)
09:30 – 12:00	Session 1A (Club Room) Basic Phenomena in Plasmas ☞ p. 35 Session 1B (Room 2.05) Intense Beam Microwave Generation ☞ p. 36 Session 1C (Hebel Saal) Fusion (Inertial, Magnetic and Alternate Concepts) ☞ p. 37 Session 1D (Mombert Saal) Plasma, Ion and Electron Sources ☞ p. 38 Session 1E (Room 2.08) Nonequilibrium Plasma Applications I ☞ p. 39
12:00 – 13:00	Lunch Break
13:00 – 14:00	Poster Session 1P (Poster Area – Foyer) Basic Phenomena in Plasmas ☞ p. 40 Space Plasmas and Partially Ionized Plasmas ☞ p. 40 Intense Beam Microwave Generation ☞ p. 42 Plasma, Ion and Electron Sources ☞ p. 43 Fusion (Inertial, Magnetic and Alternate Concepts) ☞ p. 44 Fast Z-Pinches and X-Ray Lasers I ☞ p. 44 Nonequilibrium Plasma Applications ☞ p. 46 Medical, Biological and Environmental Applications I ☞ p. 48
14:00 – 15:00	Plenary Session PL2 (Weinbrenner Saal) <i>H. Akiyama:</i> Goals and Achievements of the COE Program on Pulsed Power at Kumamoto University ☞ p. 34
15:00 – 15:30	Break (Foyer)
15:30 – 18:00	Session 2A (Club Room) Computational Plasma Physics I ☞ p. 50 Session 2B (Room 2.05) Fast Wave Devices I ☞ p. 51 Session 2C (Hebel Saal) Fast Z-Pinches and X-Ray Lasers I ☞ p. 52 Session 2D (Mombert Saal) Medical, Biological and Environm. Applications I ☞ p. 53 Session 2E (Room 2.08) Nonequilibrium Plasma Applications II ☞ p. 54
18:30 – 20:00	Reception at the Karlsruhe City Hall ☞ p. 23

Tuesday, June 17

08:00 – 09:00	Plenary Session PL3 (Weinbrenner Saal) <i>R. Redmer:</i> Giant Planets as Laboratory for High Energy Density Physics  p. 34
09:00 – 09:30	Break (Foyer)
09:30 – 12:00	Session 3A (Club Room) Intense Electron and Ion Beams  p. 55 Session 3B (Room 2.05) Fast Wave Devices II  p. 56 Session 3C (Hebel Saal) Plasma Lasers and Switching  p. 57 Session 3D (Mombert Saal) Bioelectrics  p. 58 Session 3E (Room 2.08) High Pressure and Thermal Plasma Processing I  p. 59
12:00 – 13:00	Lunch Break
13:00 – 14:00	Poster Session 2P (Poster Area – Foyer) Computational Plasma Physics  p. 60 Fast Wave Devices  p. 60 Intense Electron and Ion Beams  p. 61 Fast Z-Pinches and X-Ray Lasers II  p. 63 High Pressure and Thermal Plasma Processing  p. 64 Plasmas for Lighting  p. 66 Medical, Biological and Environmental Applications II  p. 67 Plasma Lasers and Switching  p. 68
14:00 – 15:00	Plenary Session PL4 (Weinbrenner Saal) <i>G.G. Lister:</i> Plasma Physics for Gas Discharge Lighting  p. 34
15:00 – 15:30	Break (Foyer)
15:30 – 18:00	Session 4A (Club Room) Space Plasmas and Partially Ionized Plasmas  p. 70 Session 4B (Room 2.05) Slow Wave Devices and Vacuum Microelectronics  p. 71 Session 4C (Hebel Saal) Fast Z-Pinches and X-Ray Lasers  p. 72 Session 4D (Mombert Saal) High Pressure and Thermal Plasma Processing II  p. 73 Session 4E (Room 2.08) Particle Acceleration with Lasers and Beams  p. 74
18:30 –	Wine Tasting Evening (Wineyard Wilker / Palatinate)  p. 23

Wednesday, June 18

08:00 – 09:00	2008 PSAC Award Plenary Session PL5 (Weinbrenner Saal) <i>P. Sprangle:</i> Laser-Pumped X-Ray Free Electron Laser  p. 34
09:00 – 09:30	Break (Foyer)
09:30 – 12:00	Session 5A (Club Room) Dusty Plasmas I  p. 75 Session 5B (Room 2.05) Radiation Physics, High Energy Density, Laser Produced Plasmas  p. 76 Session 5C (Hebel Saal) Fast Z-Pinches and X-Ray Lasers III  p. 77 Session 5D (Mombert Saal) Medical, Biological and Environmental Applications III  p. 78 Session 5E (Room 2.08) Microwave, FIR and Particle Diagnostics  p. 79
12:00 – 13:00	Lunch Break
13:00 – 14:00	Poster Session 3P (Poster Area – Foyer) Dusty Plasmas  p. 80 Slow Wave Devices and Vacuum Microelectronics  p. 81 Microwave Systems and Microwave Plasma Interaction  p. 82 Particle Acceleration with Lasers and Beams  p. 83 Radiation Physics, High Energy Density, Laser Produced Plasmas  p. 84 Fast Z-Pinches and X-Ray Lasers III  p. 85 Flat Panel Displays  p. 86 Optical and X-Ray Diagnostics  p. 86 Microwave, FIR and Particle Diagnostics  p. 87 Compact Pulse Power and Applications  p. 88
14:00 – 15:00	Plenary Session PL6 (Weinbrenner Saal) <i>A. Ulrich:</i> Particle Beam Induced Light Emission  p. 34
15:00 – 15:30	Break (Foyer)
15:30 – 18:00	Session 6A (Club Room) Optical and X-Ray Diagnostics  p. 89 Session 6B (Room 2.05) Codes and Modeling  p. 90 Session 6C (Hebel Saal) Plasmas for Lighting and Flat-Panel Displays I  p. 91 Session 6D (Mombert Saal) Medical, Biological and Environmental Applications III  p. 92 Session 6E (Room 2.08) Plasma Thrusters  p. 93
18:30 –	Banquet (Schwetzingen Palace)  p. 23

Thursday, June 19

08:00 – 09:00	Plenary Session PL7 (Weinbrenner Saal) <i>D. Besnard, J. Ebrardt:</i> State-of-the-Art of the LMJ Laser System for Inertial Confinement Fusion	☞ p. 34
09:00 – 09:30	Break (Foyer)	
09:30 – 12:00	Session 7A (Club Room) Dusty Plasmas II	☞ p. 94
	Session 7B (Room 2.05) Microwave Systems and Microwave Plasma Interaction	☞ p. 95
	Session 7C (Hebel Saal) Plasmas for Lighting and Flat-Panel Displays II	☞ p. 96
	Session 7D (Mombert Saal) Compact Pulse Power and Applications	☞ p. 97
	Session 7E (Room 2.08) Computational Plasma Physics II	☞ p. 98
14:00 – 18:30	Laboratory Visit (Forschungszentrum Karlsruhe)	☞ p. 24

Conference Program

Plenary Sessions

Plenary Sessions on Monday, June 16 • Weinbrenner Saal

PL1 The Physics of ITER

08:15 D.J. Campbell
 –09:15 *ITER Organization, St. Paul lez Durance, France*
 Chair: *Minh Quang Tran, EPFL Lausanne, Switzerland*

PL2 Goals and Achievements of the COE Program on Pulsed Power at Kumamoto University

14:00 H. Akiyama
 –15:00 *Kumamoto University, Japan*
 Chair: *Hansjoachim Bluhm, Research Center Karlsruhe, Germany*

Plenary Sessions on Tuesday, June 17 • Weinbrenner Saal

PL3 Giant Planets as Laboratory for High Energy Density Physics

08:00 R. Redmer, N. Nettelmann, W. Lorenzen, B. Holst, M. French, A. Kietzmann
 –09:00 *Institut für Physik, Universität Rostock, Germany*
 Chair: *Klaus-Dieter Weltmann, INP Greifswald, Germany*

PL4 Plasma Physics for Gas Discharge Lighting

14:00 G.G. Lister
 –15:00 *Osram Sylvania, Becerly, MA, USA*
 Chair: *Mounir Laroussi, Old Dominion University, VA, USA*

Plenary Sessions on Wednesday, June 18 • Weinbrenner Saal

PL5 Laser-Pumped X-Ray Free Electron Laser

08:00 P. Sprangle
 –09:00 *Naval Research Laboratory, Washington, DC, USA*
 Chair: *Ronald M. Gilgenbach, University of Michigan, USA*

PL6 Particle Beam Induced Light Emission

14:00 A. Ulrich
 –15:00 *Technische Universität München, Garching, Germany*
 Chair: *Hidenori Akiyama, Kumamoto University, Japan*

Plenary Session on Thursday, June 19 • Weinbrenner Saal

PL7 State of the Arts of the LMJ Laser System for Inertial Confinement Fusion

08:00 D. Besnard, J. Ebrardt
 –09:00 *CEA Centre, Arpajon, France*
 Chair: *Dieter H.H. Hoffmann, TU Darmstadt, Germany*

Oral Sessions on Monday Morning, June 16

Oral Session 1A (Monday, June 16, 09:30–12:00 • Club Room)

Basic Phenomena in Plasmas

Chair: Amnon Fruchtman, Holon Institute of Technology, Israel

- 1A1 Double Layers in Low Pressure Expanding Magnetised Plasmas (Invited Keynote)**
 09:30 C. Charles, R.W. Boswell
 –10:00 *Space Plasma, Power and Propulsion Laboratory, The Australian National University, ACT 0200, Australia*
- 1A2 Observations of Neutral Depletion and Ion Acceleration in a High-Power Argon Helicon Plasma**
 10:00
 –10:15 C.M. Denning, M. Wiebold, J. Scharer
University of Wisconsin-Madison, WI, USA
- 1A3 Particle-Like Behaviour of Dissipative Solitons in Gas-Discharge**
 10:15 H.-G. Purwins
 –10:30 *Institut für Angewandte Physik, University of Münster, Germany*
- 1A4 Localized State in a Dielectric Barrier Discharge System**
 10:30 L. Dong, Y. He, W. Fan, F. Liu
 –10:45 *College of Physics Science and Technology, Hebei University, Baoding, China*
- 1A5 Enhanced Electron Scattering Due to the Ion Acoustic Instability**
 10:45 S.D. Baalrud, J.D. Callen, C.C. Hegna
 –11:00 *Engineering Physics Department, University of Wisconsin-Madison, Madison, MI, USA*
- 1A6 Model for Initiation and Development of Electric Break Down in Liquids and Stability Analysis**
 11:00
 –11:15 Y.Y. Yang, J. Zhu, Y. Cho, A. Gutsol, A. Fridman
Department of Mechanical Engineering and Mechanics, Drexel University, Philadelphia, PA, USA
- 1A7 Localized Electrostatic Excitations and Higher-Order Nonlinear Effects in Warm Pair Plasmas**
 11:15
 –11:30 M. Mehdipoor¹, A. Esfandyari-Kalejahi², I. Kourakis³
¹*Department of Physics, Payam Noor University, Gonbad, Iran*
²*Faculty of Science, Department of Physics, Azerbaijan University of Tarbiat Moallem, Tabriz, Iran*
³*Center for Plasma Physics, Queen's University Belfast, Northern Ireland, UK*
- 1A8 Ordered Structures in 2D Electron-Hole Plasmas.**
 11:30 V.S. Filinov^{1,3}, H. Fehske², M. Bonitz³, V. Fortov¹, P.R. Levashov¹
 –11:45 ¹*Joint Institute for High Temperatures, Russian Academy of Sciences, Moscow, Russia*
²*Institut für Physik, Ernst-Moritz-Arndt-Universität, Greifswald, Germany*
³*Christian-Albrechts-Universität zu Kiel, Institut für Theoretische Physik und Astrophysik, Germany*
- 1A9 On the Generation and Dynamics of Complex Space Charge Structures in Low-Temperature Plasma**
 11:45
 –12:00 D.G. Dimitriu
Alexandru Ioan Cuza University, Physics, Iasi, Romania

Oral Session 1B (Monday, June 16, 09:30–12:00 • Room 2.05)
Intense Beam Microwave Generation

Chair: Alan D.R. Phelps, University of Strathclyde, UK

- 1B1 Production of Powerful Spatially Coherent Radiation Based on Two-Dimensional Distributed Feedback (Invited Keynote)**
 09:30–10:00 N.S. Ginzburg¹, N.Yu. Peskov¹, A.S. Sergeev¹, V.Yu. Zaslavsky¹, A.V. Arzhannikov², P.V. Kalinin², S.L. Sinitzky², A.D.R. Phelps³, I.V. Konoplev³, A.W. Cross³, M. Thumm^{4,5}
¹Institute of Applied Physics RAS, N.Novgorod, Russia
²Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia
³University of Strathclyde, Glasgow, UK
⁴Research Center Karlsruhe (FZK), IHM, Germany, ⁵University of Karlsruhe, IHE, Germany
- 1B2 Experiments for Realizing of Two-Stage Scheme of Sub-mm Generation at ELMI-Device**
 10:00–10:15 A.V. Arzhannikov¹, N.S. Ginzburg³, P.V. Kalinin², A.S. Kuznetsov², S.A. Kuznetsov¹, N.Yu. Peskov³, A.S. Sergeev³, S.L. Sinitzky¹, V.D. Stepanov¹, V.Yu. Zaslavsky³, I.V. Zotova³
¹NSU, Novosibirsk, Russia
²BINP RAS, Novosibirsk, Russia
³IAP RAS, N. Novgorod, Russia
- 1B3 Powerful 30-GHz JINR-IAP FEM: Recent Results, Prospects and Applications**
 10:15–10:30 N.Yu. Peskov¹, N.S. Ginzburg¹, A.K. Kaminsky², S.V. Kuzikov¹, E.A. Perelshtein², S.N. Sedykh², A.S. Sergeev¹
¹Institute of Applied Physics, Russian Academy of Sciences, Nizhny Novgorod, Russia
²Joint Institute for Nuclear Research, Dubna, Russia
- 1B4 Coaxial 2D-1D Two-Mirror Cavity Free-Electron Maser Experiment**
 10:30–10:45 P. MacInnes¹, I.V. Konoplev¹, A.W. Cross¹, W. He¹, A.D.R. Phelps¹, C.G. Whyte¹, K. Ronald¹, C.W. Robertson¹, M. Thumm^{2,3}
¹SUPA, Department of Physics, University of Strathclyde, Glasgow, UK
²University of Karlsruhe, IHE, Germany
³Research Center Karlsruhe (FZK), IHM, Germany
- 1B5 Numerical Model of High Power W-Band Maser Based on a Two Dimensional Periodic Structure**
 10:45–11:00 L. Fisher, I.V. Konoplev, A.W. Cross, A.D.R. Phelps
 SUPA Department of Physics, University of Strathclyde, Glasgow, UK
- 1B6 Initial Experimental Results From a Relativistic Magnetron Driven by Transparent Cathodes**
 11:00–11:15 E. Schamiloglu, M.I. Fuks, C.J. Buchebauer, S. Prasad, M. Roybal
 University of New Mexico, Albuquerque, NM, USA
- 1B7 Frequency Increasing and Power Enhancement of Microwave Sources Based on Superradiance From Intense Electron Bunch**
 11:15–11:30 I.V. Zotova¹, N.S. Ginzburg¹, A.S. Sergeev¹, M.I. Yalandin²
¹Institute of Applied Physics RAS, N.Novgorod, Russia
²Institute of Electrophysics RAS, Ekaterinburg, Russia
- 1B8 High Power and Repetitively Pulsed Operation of a Relativistic Extended-Interaction-Cavity Oscillator**
 11:30–11:45 H. Huang, X. Jin, Y. Gan, L. Lei, B. Ju, Y. Zhang, G. Luo
 Institute of Applied Electronics, CAEP, Mianyang, China
- 1B9 Triode Generators on the Basis of FE Emitters**
 11:45–12:00 I.A. Guzilov¹, A.V. Kostin¹, O.Yu. Maslennikov¹, P.V. Minakov², A.Yu. Poroykov², A.T. Rakhimov², M.V. Kalinin³
¹FSUE "TORIY", Moscow, Russian Federation
²Lomonosov Moscow State University, Moscow, Russian Federation
³Vladykino Mechanical Plant, Moscow, Russian Federation

Oral Session 1C (Monday, June 16, 09:30–12:00 • Hebel Saal)*Fusion (Inertial, Magnetic and Alternate Concepts)*Chair: *Claude Deutsch, University of Paris Sud II, France*

- 1C1 An Outlook of Plasma Physics Research on Heavy Ion Research Facility at Lanzhou, China (Invited Keynote)**
 09:30
 –10:00 Y. Zhao, G. Xiao, H. Xu, M. Xie, H.W. Zhao, W. Zhan
Institute of Modern Physics, Chinese Academy of Science, Lanzhou, China
- 1C2 Progress with the New Multi-Frequency ECRH System for ASDEX Upgrade (Invited Keynote)**
 10:00 D. Wagner¹, G. Grünwald¹, F. Leuterer¹, F. Monaco¹, M. Münich¹, H. Schütz¹, J. Stober¹, H. Zohm¹,
 –10:30 T. Franke¹, M. Thumm², R. Heidinger³, A. Meier³, G. Gantenbein², J. Flamm², W. Kasperek⁴, C. Lechte⁴,
 A. Litvak⁵, A. Cirkov⁵, G.G. Denisov⁵, L. Popov⁵, V. Nichiporenko⁶, V. Myasnikov⁶, E. Tai⁶, E. Solyanova⁶,
 S. Malygin⁶
¹Max-Planck-Institut für Plasmaphysik, Garching, Germany
²Research Center Karlsruhe (FZK), IHM, Germany
³Research Center Karlsruhe (FZK), IMF I, Germany
⁴Institut für Plasmaforschung, Universität Stuttgart, Germany
⁵Institute of Applied Physics, RAS, Nizhny Novgorod, Russia
⁶Gycom Ltd., Nizhny Novgorod, Russia
- 1C3 Plasma Disruptions in ITER and the ECH Upper Port Plug Design**
 10:30 D. Strauss¹, R. Heidinger¹, G. Hailfinger², K. Kleefeldt¹, A. Meier¹, T.A. Scherer¹, P. Spaeh¹, A. Vaccaro¹
 –10:45 ¹Research Center Karlsruhe (FZK), IMF-I, Germany
²Research Center Karlsruhe (FZK), IRS, Germany
- 1C4 Design and Testing of the ECH Upper Port Plug for ITER**
 10:45 R. Heidinger¹, S. Cirant³, R. Chavan⁴, M. De Baar⁵, B. Elzendoorn⁵, G. Gantenbein², M. Henderson⁴,
 –11:00 K. Kleefeldt¹, W. Leonhardt², A. Meier¹, D. Mellein², G. Saibene⁶, T.A. Scherer¹, P. Spaeh¹, D. Strauss¹,
 A. Vaccaro¹, H. Zohm⁷
¹Research Center Karlsruhe (FZK), IMF-I, Germany
²Research Center Karlsruhe (FZK), IHM, Germany
³IFP, CNR, Milano, Italy
⁴CRPP, EPFL, Switzerland
⁵FOM Rijnhuizen, Nieuwegein, The Netherlands
⁶EFDA Close Support Unit, Garching, Germany
⁷MPI, IPP, Garching, Germany
- 1C5 Neutronics Analyses for the ITER Extended Performance ECRH Launcher**
 11:00 A. Serikov, U. Fischer, R. Heidinger
 –11:15 *Research Center Karlsruhe (FZK), Germany*
- 1C6 CVD Diamond Disks and Shells for Nuclear Fusion Experiments**
 11:15 E. Wörner¹, C. Wild¹, W. Müller-Sebert¹, A. Kriele¹, D. Brink¹, R. Heidinger², M. Thumm^{3,4}, J. Biener⁵,
 –11:30 A. Hamza⁵
¹Fraunhofer-Institut für Angewandte Festkörperphysik, Freiburg, Germany
²Research Center Karlsruhe (FZK), IMF-I, Germany
³Research Center Karlsruhe (FZK), IHM, Germany
⁴University of Karlsruhe, IHE, Germany
⁵Lawrence Livermore National Laboratory, Livermore, CA, USA
- 1C7 Direct-Indirect Hybrid Implosion of Fuel Pellet in Heavy Ion Inertial Fusion**
 11:30 Y. Iizuka¹, S. Kawata¹, T. Kikuchi¹, A.I. Ogoyski², J. Limpouch³, O. Klimo³
 –11:45 ¹Graduate School of Engineering, Utsunomiya University, Japan
²Technical University of Varna, Bulgaria
³Czech Tech. University, Prague, Czech Republic
- 1C8 Measurement of Plasma Displacements by a Designed Sine-Coil and Mirnov Coils in the IR-T1 Tokamak**
 11:45 P. Khorshid¹, M. Razavi¹, M. Molaii¹, M. Ghoranneviss², A. TalebiTaher², R. Arvin², S. Mohammadi²,
 –12:00 A. NikMohammadi²
¹Dept. of Physics, Islamic Azad University, Mashhad, Iran
²Plasma Physics Research Center, Islamic Azad University, Tehran, Iran

Oral Session 1D (Monday, June 16, 09:30–12:00 • Mombert Saal)*Plasma, Ion and Electron Sources*Chair: *Yakov E. Krasik, Technion, Israel*

- 1D1 Ion Sources for High and Low Energy Extremes of Ion Implantation (Invited Keynote)**
 09:30 A. Hershcovitch
 –10:00 *Brookhaven National Laboratory Upton, Upton, NY, USA*
- 1D2 Advancing of Novel Plasma Devices Based on the Plasma Lens (Invited Keynote)**
 10:00 A.A. Goncharov, A.N. Evsyukov, I.V. Litovko
 –10:30 *Institute of Physics National Academy of Science of Ukraine, Kiev, Ukraine*
- 1D3 Magnetized Plasma Sheath Dynamics in Plasma Source Ion Implantation**
 10:30 M.R. Rezaee, A.R. Niknam, H. Ghomi, H. Latifi
 –10:45 *Laser and Plasma Research Institute, Shahid Behesti University, Tehran, Iran*
- 1D4 Atmospheric Pressure Plasma Jets: Concepts and Realization of Miniaturized Jets and Jet Arrays**
 10:45 D. Theirich, J. Kedzierski, J. Engemann
 –11:00 *University of Wuppertal, Forschungszentrum für Mikrostrukturtechnik, Germany*
- 1D5 Material Analysis and Characterization of Cesium Iodide (CsI) Coated C Fibers for Field Emission Applications**
 11:00 V. Vlahos¹, D. Morgan^{1,2}, J.H. Booske^{1,3}
 –11:15 ¹*Interdisciplinary Materials Science Programm, University of Wisconsin - Madison, USA*
²*Department of Materials Science and Engineering, University of Wisconsin - Madison, USA*
³*Department of Electrical and Computer Engineering, University of Wisconsin - Madison, USA*
- 1D6 Atmospheric Pressure Field Electron Emission From Nanostructures**
 11:15 A.M. Agiral, J.G.E. Gardeniers
 –11:30 *MESA+ Institute for Nanotechnology, Faculty of Science and Technology, University of Twente, Enschede, The Netherlands*
- 1D7 High Current Electron Source for Linear Inductive Injector**
 11:30 O.Yu. Maslennikov¹, V.A. Smirnov¹, A.V. Krylov¹, A.A. Kornuhin¹, J.A. Potapov¹, J.S. Sudakov¹,
 –11:45 G.I. Kuznetsov², P.V. Logatchev²
¹*FSUE "SPE Toriy", Moskow, Russia*
²*Budker INP, Novosibirsk, Russia*
- 1D8 Electron Beam Sources with Cold Cathodes Based on DC High-Voltage Glow-Discharges for PVD Applications**
 11:45 P. Feinäugle¹, G. Mattausch¹, F. Rögner¹, V.I. Melnyk², I.V. Melnyk², B.A. Tugay²
 –12:00 ¹*FEP, Fraunhofer-Institute for Electron Beam and Plasma Technology, Dresden, Germany*
²*Kiev Polytechnic Institute, Ukraine*

Oral Session 1E (Monday, June 16, 09:30–12:00 • Room 2.08)*Nonequilibrium Plasma Applications I*Chair: *Michael G. Kong, University of Loughborough, UK*

- 1E1 From Submicrosecond to Nanosecond Pulsed Atmospheric Pressure Plasmas (Invited Keynote)**
 09:30
 –10:00 F. Iza, J.L. Walsh, M.G. Kong
Loughborough University, Leicestershire, United Kingdom
- 1E2 Numerical Model of a Nanosecond Discharge for Supersonic Combustion**
 10:00 S. Abbate, D. Packan, P-Q. Elias, A. Broc
 –10:15 *ONERA, Palaiseau, France*
- 1E3 Parallelization of a 2D Fluid Modeling Code for Non-Thermal Gas Discharges**
 10:15 J.-S. Wu¹, C. Hung¹, M.-H. Hu¹, Y.-M. Chiu¹, F.-N. Hwang²
 –10:30 ¹*Department of Mechanical Engineering, National Chiao Tung University, Hsinchu, Taiwan*
²*Department of Mathematics, National Chiao Tung University, Chungli, Taiwan*
- 1E4 Control of Combustion by Electrical-Discharge-Excited Oxygen Molecules**
 10:30 A.M. Starik, B.I. Loukhovitsky, N.S. Titova, L.V. Bezgin, V.I. Kopchenov
 –10:45 *Central Institute of Aviation Motors, Moscow, Russia*
- 1E5 Miniature Gas Flow as a Novel Scheme for Generation of Atmospheric Direct Current Glow Discharges**
 10:45
 –11:00 N. Shitai, M. Nakazawa, H. Shito, S. Ibuka, S. Ishii
Tokyo Institute of Technology, Japan
- 1E6 Liquid Fuel Conversion Using Gliding Discharge in Tornado for Direct Use in Solid Oxide Fuel Cells**
 11:00
 –11:15 M. Gallagher, A. Rabinovich, A. Gutsol, A. Fridman
Drexel University, Drexel Plasma Institute, Philadelphia, PA, USA
- 1E7 Properties and Application Potential of Nanoparticles Produced by a Non-Equilibrium Microwave Plasma**
 11:15
 –11:30 D.V. Szabo, R. Ochs, S. Schlabach
Research Center Karlsruhe (FZK), IMF III, Germany
- 1E8 Selective Plasma Etching of Micro and Nano Polymer-Matrix Composites**
 11:30 U. Cvelbar, M. Mozetič
 –11:45 *Jozef Stefan Institute, Ljubljana, Slovenia*
- 1E9 Non-Thermal Plasma Tools for Ignition and Flame Control**
 11:45 I.B. Matveev, S.A. Matveeva
 –12:00 *Applied Plasma Technologies, McLean, VA, USA*

Poster Session on Monday, June 16

Poster Session 1P (Monday, June 16, 13:00–14:00 • Poster Area – Foyer)

Basic Phenomena in Plasmas

Chair: Amnon Fruchtman, Holon Institute of Technology, Israel

- 1P1** **Investigations of Time-Averaged Electron Energy and Electron Density for Different Radii and Gas Pressures in Capacitively Coupled Neutral Loop Discharges (CCP-NLD)**
M. Vural, F. Sirin, R.P. Brinkmann
Theoretical Electrical Engineering, Ruhr-University, Bochum, Germany
- 1P2** **Universal Aspects of Pattern Formation in Planar Gas-Discharge Systems**
H.-G. Purwins
Institut Für Angewandte Physik, University of Münster, Germany
- 1P3** **On the Structure of Positive Streamers in Air Between Point-To-Plane-Electrodes**
T.M.P. Briels¹, S. Nijdam¹, E.M. van Veldhuizen¹, U. Ebert^{1,2}
¹*Dept. Applied Physics, Technische Universiteit Eindhoven, The Netherlands*
²*Centrum Wiskunde & Informatica Amsterdam, The Netherlands*
- 1P4** **Electrode Sheath Model for an Argon Free Burning Arc Discharge at Very High Pressure and Low Intensity**
E. Izquierdo, J. Gonzalez-Aguilar, L. Fulcheri
Ecole des Mines de Paris, Sophia-Antipolis, France
- 1P5** **Charge Exchange and Ionization in Hydrogen Atom-Fully Stripped Ion Collisions in Debye Plasmas**
H. Zhang¹, J.G. Wang¹, B. He¹, Y.B. Qiu¹, R.K. Janev²
¹*Institution of Applied Physics and Computational, Beijing, P.R. China*
²*Macedonian Academy of Sciences and Arts, Skopje, Macedonia*
- 1P6** **Nonlinear Dynamics of Fluctuations in the Presence of Sheared Parallel and Perpendicular Flows in a Magnetized Laboratory Plasma**
M. Gilmore, L. Yan, S. Xie, C. Watts, A.G. Lynn
University of New Mexico, Albuquerque, NM, USA
- 1P7** **Spectral Investigation of a Fireball in Low-Temperature Argon Plasma**
S.O. Gurlui¹, D.G. Dimitriu¹, C. Ionita², R.W. Schrittwieser²
¹*Department of Physics, Alexandru Ioan Cuza University, Iasi, Romania*
²*Institute of Ion Physics and Applied Physics, Leopold-Franzens University, Innsbruck, Austria*
- 1P8** **Complex Oscillations Induced by the Nonlinear Dynamics of the Fireballs in Plasma**
O. Niculescu, D.G. Dimitriu
Department of Physics, Alexandru Ioan Cuza University, Iasi, Romania
- 1P9** **Energy Transfer From Ar Metastable Atom to N₂ Molecule in DBD-Driven Microplasma Jet**
H. Motomura, H. Matsuba, T. Nagahama, M. Jinno
Department of Electrical and Electronic Engineering, Ehime University, Matsuyama, Japan

Poster Session 1P (Monday, June 16, 13:00–14:00 • Poster Area – Foyer)

Space Plasmas and Partially Ionized Plasmas

Chair: Reinhard Schlickeiser, Ruhr-University Bochum, Germany

- 1P10** **Two-Dimensional Fluid Simulations for the Inductively Coupled Acetylene/Hydrogen Plasmas**
Y. Hu, T.-L. Lin, Y.-M. Chiu
Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan
- 1P11** **On Diagnostics of Space Plasma with Tubular Dipole Antenna**
A. Kiraga
Space Research Center, Warsaw, Poland
- 1P12** **A Correlative Study on the Last Four Solar Cycles**
K.A. Firoz
Department of Nuclear and Sub-Nuclear Physics, University of Pavol Jozef Šafarik, Košice, Slovakia

- 1P13 Study of Solar Wind Plasma Structure and Their Association with Geomagnetic Field Variation**
S.K. Mishra, D.P. Tiwari
Dept. of Physics, A.P.S. University, Rewa, India
- 1P14 Simulating Auroral Kilometric Radiation Emission Mechanisms Through a 3D PiC Code**
K.M. Gillespie¹, D.C. Speirs¹, K. Ronald¹, A.D.R. Phelps¹, S.L. McConville¹, A.W. Cross¹, R. Bingham¹, B.J. Kellett², I. Vorgul³, R.A. Cairns³
¹*SUPA Department of Physics, University of Strathclyde, Glasgow, Scotland*
²*Space Physics Division, STFC, Rutherford Appleton Laboratory Didcot, England*
³*School of Mathematics and Statistics, University of St Andrews, Scotland*
- 1P15 Auroral Cyclotron Emission Mechanisms Demonstrated in the Laboratory**
S.L. McConville¹, K. Ronald¹, A.D.R. Phelps¹, A.W. Cross¹, D.C. Speirs¹, K.M. Gillespie¹, R. Bingham^{1,3}, C.W. Robertson¹, C.G. Whyte¹, I. Vorgul², R.A. Cairns², B.J. Kellett³
¹*University of Strathclyde, Glasgow, Scotland*
²*University of St. Andrews, Scotland*
³*School of Mathematics and Statistics, University of St. Andrews, Scotland*
- 1P16 Plasma Focus Discharge on Mercury**
A.L. Peratt
Los Alamos National Laboratory, Los Alamos, NM, USA
- 1P17 Electric Discharges to Dust Covered Surface Show Similarity to Features on Planetary Bodies**
Z. Dahlen Parker
Eloy, AZ, USA
- 1P18 A Survey of the Orinoco River Basin for Intense Aurora Z-Pinch Patterns Recorded by Mankind in Prehistory**
W.F. Yao¹, A.L. Peratt^{2,3}
¹*Computer Resource Center, Albuquerque Public Schools System, Albuquerque, NM, USA*
²*Applied Physics Division, Los Alamos National Laboratory, Los Alamos, NM, USA*
³*The Museum of Archaeology and Anthropology, University of Pennsylvania, Philadelphia, PA, USA*
- 1P19 The Influence of 112 Synchrotron Radiating Birkeland Filaments Formed in an Archaic Auroral Sheath on Man-Made Structures and Artifacts Found Worldwide**
A.H. Qöyawayma¹, A.L. Peratt²
¹*Qöyawayma Ceramics and Epigraphy, Prescott, AZ, USA*
²*Applied Physics Division, Los Alamos National Laboratory, Los Alamos, NM, USA*
- 1P20 The Collisional, Capacitive RF Sheath: Models With and Without the Approximation of a Sharp Electron Edge**
R.P. Brinkmann
Center for Plasma Science and Technology, Ruhr University, Bochum, Germany
- 1P21 Effect of Plasma Particles on Synthesis of Vertically-Alligned Carbon Nanofibers in Plasma-Enhanced Chemical Vapor Deposition**
I. Denysenko¹, K. Ostrikov², N.A. Azarenkov¹
¹*Department of Physics and Technologies, V.N. Karazin Kharkiv National University, Ukraine*
²*School of Physics, University of Sydney, Australia*
- 1P22 Saturation in Ion-Channel Free Electron Laser with Electromagnetic Wiggler**
L.M. Taghizadeh, B.P. Maraghechi, M.H. Rouhani
Amirkabir University of Technology, Tehran, Iran
- 1P23 Investigation of the Plasma Bullets Generated by Low Temperature Plasma Jets**
A. Begum, S.K. Dhali, M. Laroussi
Electrical & Computer Engineering Department, Old Dominion University, Norfolk, VA, USA
- 1P24 Argon Needle Discharge Excited by 5-ns 20-kV Voltage Pulse**
Y. Yankelevich¹, R. Baksht¹, A. Pokryvailo¹, S. Kendler²
¹*Soreq NRC, Propulsion Physics Lab., Yavne, Israel*
²*IIBR., Ness Ziona, Israel*
- 1P25 Electron-Beam Generated Air Plasma: Measurement of Ozone and Electron Density**
R.J. Vidmar¹, K.R. Stalder²
¹*University of Nevada, Reno, NV, USA*
²*Stalder Technologies and Research, Redwood City, CA, USA*

- 1P26 A Microstrip-Line Microwave Interferometer for Monitoring of Plasma Density of Processing Plasmas**
C.H. Hsieh, Y.W. Liang, C. Lin, K. Leou
National Tsing Hua University, Hsinchu, Taiwan
- 1P27 Investigation of Transient Dynamic Behaviors of Striations in Direct Current Discharges**
W. Wu, Y. Ho, K. Leou
National Tsing Hua University, Hsinchu, Taiwan

Poster Session 1P (Monday, June 16, 13:00–14:00 • Poster Area – Foyer)

Intense Beam Microwave Generation

Chair: Alan D.R. Phelps, University of Strathclyde, UK

- 1P28 Two-Dimensional Bragg Structures for Powerful Planar FEM (Modeling and Experimental Testing)**
N.S. Ginzburg¹, V.Yu. Zaslavsky¹, N.Yu. Peskov¹, A.S. Sergeev¹, A.V. Arzhannikov², P.V. Kalinin², S.L. Sinitsky², M. Thumm³
¹*Institute of Applied Physics, RAS, Nizhny Novgorod, Russia*
²*Budker Institute of Nuclear Physics, SB RAS, Novosibirsk, Russia*
³*Research Center Karlsruhe (FZK), IHM, Germany*
- 1P29 B-Field Perturbation Effects on Magnetic Priming of a Relativistic Magnetron**
B.W. Hoff¹, R.M. Gilgenbach¹, N.M. Jordan¹, Y.Y. Lau¹, E. Cruz¹, D. French¹, M.R. Gomez¹, J. Zier¹, M.D. Haworth², T.A. Spencer², D. Price³
¹*University of Michigan, Ann Arbor, MI, USA*
²*Air Force Research Laboratory, Albuquerque, NM, USA*
³*L-3 Communications, San Leandro, CA, USA*
- 1P30 Simulation and Experiment on Relativistic Klystron Amplifier Driven by Strong Input Power**
W. Song¹, Y. Lin¹, G. Liu², X. Zhang², Z. Ding², Y. Zhang², J. Sun², Q. Hao²
¹*Tsinghua University, Beijing, China*
²*Northwest Institute of Nuclear Technology, Xi'an, China*
- 1P31 Influence of Distance Between Bragg Reflector and Slow Wave Structure on Output Power of Relativistic Barkward Wave Oscillator**
G. Liu, C. Chen, J. Sun, X. Zhang, R. Xiao, H. Shao, Z. Song, J. Fan, H. Wang, Y. Hu
Northwest Institute of Nuclear Technology, Xi'an, China
- 1P32 Enhancement of High Power Microwave Conversion Efficiency From Axial Virtual Cathode Oscillator in Accordance with Cathode Materials**
K.B. Song, S.H. Cho, Y. Seo, E.H. Choi
Charged Particle Beam and Plasma Laboratory, PDP Research Center, Kwangwoon University, Seoul, Korea
- 1P33 Influence of Anode Plasma on High-Power Microwave Generation in Virtual Cathode Oscillator**
Y. Zhang¹, Y. Lin¹, G. Liu², H. Shao², Z. Song², R. Xiao²
¹*Tsinghua University, Beijing, China*
²*Northwest Institute of Nuclear Technology, Xi'an, China*
- 1P34 Study of Reltrons in the Repetitive Operation**
J. Gardelle, P. Modin, L. Courtois, A.S. de Ferron, L. Voisin
CEA/Centre d'Etudes Scientifiques et Techniques d'Aquitaine, Le Barp, France
- 1P35 Stable Pulse-Periodic Source of GW-Level Nanosecond Microwave Pulses**
A.A. Elchaninov, V.V. Rostov, D.M. Grishin, V.P. Gubanov, A.V. Gunin, A.I. Klimov, A.S. Stepchenko
Institute of High Current Electronics, SB RAS, Tomsk, Russia
- 1P36 Triple-Point Cathodes for High Current Vacuum Electron Devices**
N.M. Jordan, R.M. Gilgenbach, B.W. Hoff, Y.Y. Lau, D. French
University of Michigan, Ann Arbor, MI, USA

Poster Session 1P (Monday, June 16, 13:00–14:00 • Poster Area – Foyer)
Plasma, Ion and Electron Sources

 Chair: *Yakov E. Krasik, Technion, Israel*

- 1P37 Application of a MASWP: Duo-Plasmaline Next Generation**
 L. Alberts, M. Kaiser, M. Graf, C. Hunyar, K. Nauenburg, E. Räuchle
Fraunhofer ICT, Pfinztal, Germany
- 1P38 A Large-Volume and High-Efficient Microwave Plasma Source with Planes Slotted Antenna**
 Q. Zhang, G. Zhang, J. Feng, S. Wang
Department of Electrical Engineering, Tsinghua University, Beijing, China
- 1P39 Spectroscopic Characteristics of High Power Pulse Operated Multi-Gas Microplasma Source for Elemental Analysis**
 H. Miyahara, Y. Nagata, R. Shimada, E. Hotta, A. Okino
Tokyo Institute of Technology, Yokohama, Japan
- 1P40 Multiple Discharge Channels in a Cascaded Arc to Produce Extreme Hydrogen Plasma Beams**
 W.A.J. Vijvers¹, R.S. Al¹, M.A. van den Berg¹, H.J.N. van Eck¹, W.J. Goedheer¹, B. de Groot¹,
 A.W. Kleyn^{1,3}, W.R. Koppers¹, O.G. Kruijt¹, N.J. Lopes Cardozo^{1,2}, H.J. van der Meiden¹, M.J. van de Pol¹,
 P.R. Prins¹, J. Rapp^{1,4}, D.C. Schram^{1,2}, A.E. Shumack¹, P.H.M. Smeets¹, J. Westerhout¹, G.M. Wright¹,
 G.J. van Rooij¹
¹*FOM-Institute for Plasma Physics Rijnhuizen, Nieuwegein, The Netherlands*
²*Eindhoven University of Technology, The Netherlands*
³*Leiden Institute of Chemistry, Leiden University, The Netherlands*
⁴*IEF-4, Forschungszentrum Jülich GmbH, Germany*
- 1P41 High Voltage Pulsed, Cold Atmospheric Plasma Jets: Physical Characteristics for Various Geometries**
 N. Georgescu, C.P. Lungu
National Institute for Laser, Plasma and Radiation Physics, Bucharest, Romania
- 1P42 Influence of Arc Current Modulation in Plasma Torch on Jet Oscillations**
 M. Hrabovsky, V. Kopecky
Institute of Plasma Physics AS CR, Prague, Czech Republic
- 1P43 Deposition of ZnO Films on Inner Walls of Plastic Tubes by DC Arc Plasmatron**
 O.V. Penkov, V.Y. Plaksin, H.-J. Lee, R. Mansur
Cheju National University, Korea
- 1P44 $\vec{E} \times \vec{B}$ Radial Plasma Acceleration**
 G. Makrinich, A. Fruchtman
H.I.T.-Holon Institute of Technology, Israel
- 1P45 ECRX, a Plasma Source for Generating High Energy X-Ray**
 N. Majeri^{1,2}, C. Cachoncinlle¹, R. Viladrosa¹, E. Robert¹, J.-M. Pouvesle¹, S. Milsant², M. Hugnot²
¹*Universite d'Orléans, France*
²*INEL, Artenay, France*
- 1P46 Particular Currents of Ion Species Emitted From Fe + 2%Si Plasma Produced by a Nd:YAG Laser**
 A. Czarnecka¹, P. Parys¹, M. Rosiński¹, L. Ryc¹, J. Wolowski¹, J. Krása², L. Láska²
¹*Institute of Plasma Physics and Laser Microfusion, Warsaw, Poland*
²*Institute of Physics, ASCR, Prague, Czech Republic*
- 1P47 Computer Simulation for Ion Sources Optimization**
 I.V. Litovko¹, V.I. Gushenets², E.M. Oks²
¹*Institute of Nuclear Research NASU, Kiev, Ukraine*
²*High-Current Electronics Institute SO RAN, Tomsk, Russia*
- 1P48 Modeling Ion Sources with Application to Neutron Generation and Surface Treatment**
 P. Stoltz
Tech-X Corporation, Boulder, USA
- 1P49 Ion Energy Spread Measurements of Inductively Coupled Plasma Ion Source**
 P.Y. Nabhiraj¹, R. Menon¹, R.K. Bhandari¹, G.M. Rao², S. Mohan²
¹*Variable Energy Cyclotron Centre, Kolkata, India*
²*Indian Institute of Science, Bangalore, India*

- 1P50 High Current Multicapillary Dielectric Cathodes**
 J.Z. Gleizer, Y. Hadas, V.T. Gurovitch, J. Felsteiner, Ya.E. Krasik
Physics Department, Technion City, Haifa, Israel
- 1P51 Electron Emission From PZT and PLZT Ferroelectric Ceramics by External Pulsed Electric Field**
 M. Seo¹, I. Kim¹, K. Hong²
¹ *Technology Research Center, Agency for Defense Development, Daejeon, Korea*
² *Department of Physics, Chungnam National University, Daejeon, Korea*

Poster Session 1P (Monday, June 16, 13:00–14:00 • Poster Area – Foyer)

Fusion (Inertial, Magnetic and Alternate Concepts)

Chair: *Claude Deutsch, University of Paris Sud II, France*

- 1P52 Thermal Physics Investigation of Alternate Systems with D-³HE Plasma**
 S.V. Ryzhkov
Moscow State Technical University, Russia
- 1P53 Features of a New PDI Branch Observed in TST-2 During High Harmonic Fast Wave Injection**
 Y. Adachi¹, A. Ejiri¹, Y. Takase¹, O. Watanabe², T. Oosako¹, S. Kainaga³, T. Masuda¹, M. Sasaki³,
 J. Sugiyama¹, H. Tojo¹, T. Yamaguchi¹
¹ *Graduate School of Frontier Science, University of Tokyo, Japan*
² *High Temperature Plasma Center, University of Tokyo, Japan*
³ *Graduate School of Science, University of Tokyo, Japan*
- 1P54 Fast Wave Mode Conversion in Three-Ion Component Plasmas**
 Y. Kazakov¹, I. Pavlenko¹, I. Girka¹, B. Weyssow²
¹ *Kharkiv National University, Ukraine*
² *EFDA-CSU Garching, Germany*
- 1P55 Design Modification of Millimeter Wave Transmission on ITER Equatorial Launcher**
 K. Takahashi, K. Kajiwara, N. Kobayashi, A. Kasugai, K. Sakamoto
Plasma Heating Lab., JAEA, Naka, Japan
- 1P56 Impurity Ion Dynamics Near Magnetic Islands in the Standard and High-Mirror Configurations of Wendelstein 7-X**
 Z.S. Kononenko, A.A. Shishkin
Department of Physics and Technology, Kharkiv National University, Ukraine
- 1P57 Study of Channeling in Thermonuclear Plasmas by Laser in the Inertial Confinement Fusion**
 J.F. Miramar Blazquez
Universidad de Zaragoza, Spain
- 1P58 Trapped Light Bullets Into a Thermonuclear Plasma Corresponding to the Inertial Confinement Fusion**
 J.F. Miramar Blazquez
Universidad de Zaragoza, Spain
- 1P59 Current Sheath Dynamics and its Evolution Studies in Sahand Filippov Type Plasma Focus**
 M.A. Mohammadi^{1,2}, S. Sobhanian^{1,2}, M. Ghomeishi¹, I. Shabani¹
¹ *Department of Atomic & Molecular Physics, University of Tabriz, Iran*
² *Research Institute for Applied Physics and Astronomy, University of Tabriz, Iran*
- 1P60 Spectral Diagnosis of ICF Plasmas**
 B. Duan, Z.Q. Wu, Y. Yan, Y.M. Li, J.G. Wang
Institute of Applied Physics and Computational Mathematics, Beijing, P.R. China

Poster Session 1P (Monday, June 16, 13:00–14:00 • Poster Area – Foyer)

Fast Z-Pinches and X-Ray Lasers I

Chair: *Michael E. Cuneo, Sandia National Laboratories, NM, USA*

- 1P61 Design, Construction and Illustration of Amirkabir Pf; the First Iranian Mather Type Plasma Focus Facility**
 R. Amrollahi, M. Habibi, M. Attaran
Amirkabir University of Technology, Tehran, Iran

- 1P62 Theoretical Analysis of Pressure Perturbations at Dense Plasma Column Formed in Radial Phase of a Mather Type Plasma Focus**
R. Amrollahi, M. Habibi
Amirkabir University of Technology, Tehran, Iran
- 1P63 Experimental Investigation of Pinched Plasma Current and HXR Intensity Using Ne in Different Pressures by Amirkabir Plasma Focus Facility**
R. Amrollahi, M. Habibi, R. Etaati
Amirkabir University of Technology and RPRC, Tehran, Iran
- 1P64 The Soft X-Ray Spectrum and Plasma Jet Properties in a Range of Sub-Joule Capillary Discharges Operated in Argon**
E. Wyndham¹, M. Favre¹, G. Avaria¹, F. Guzmán¹, H. Bhuyan¹, H. Chuaqui¹, S. Zakharov², P. Choi²
¹*Physics Department, Pontificia Universidad Católica de Chile, Santiago, Chile*
²*EPPRA sas, Silic 706, Courtaboeuf, France*
- 1P65 Pseudospark Discharge as a Source of EUV Radiation in a Vicinity of 13.5 nm**
Y.D. Korolev, I.A. Shemyakin, O.B. Frants, V.G. Geyman, N.V. Landl, R.V. Ivashov
Institute of High Current Electronics, Tomsk, Russia
- 1P66 Particle Emission of Discharge-Based Soft X-Ray Lasers**
K. Kolacek¹, J. Schmidt¹, J. Straus¹, V. Prukner¹, O. Frolov¹, P. Hoffer¹, L. Juha², V. Hajkova²
¹*Institute of Plasma Physics AS CR, Prague, Czech Republic*
²*Institute of Physics AS CR, Prague, Czech Republic*
- 1P67 Experimental Study of Xenon and Tin Discharge Produced Plasma EUV Light Source**
M. Watanabe, N. Kishi, J. Yamada, O. Sakuchi, J. Fei, Z. Qiushi, A. Okino, K. Horioka, E. Hotta
Tokyo Institute of Technology, Yokohama, Japan
- 1P68 Compact Low Current X-Pinch Based EUV Source for Lithography**
S.M. Hassan¹, E.L. Clark¹, A. Gopal¹, S. Minardi¹, C. Petridis¹, J. Chatzakis¹, G. Androulakis¹, M. Tatarakis¹, E.O. Baronova², V.V. Vikhrev², P. Lee³
¹*Laboratory of Optoelectronics, Lasers, and Plasma Technology, Technological Educational Institute of Crete, Greece*
²*RRC Kurchatov Institute, Moscow, Russia*
³*NIE, Nanyang Technological University, Nanyang Walk, Singapore*
- 1P69 Design and Realisation of Apparatus to Study Capillary Discharge in Gas**
M. Nevrla, A. Jancarek
Physical Electronics, Czech Technical University, Prague, Czech Republic
- 1P70 Plasma Diagnostics of the Dense Plasma Focus in Accordance with Insulator Lengths in Xe Gas for Extreme Ultraviolet Lithography (EUVL)**
Y.J. Hong, P.Y. Oh, G.C. Kwon, H.M. Shin, E.H. Choi
Charged Particle Beam and Plasma Laboratory, PDP Research Center, Kwangwoon University, Seoul, Korea
- 1P71 Investigation of “Hot” Electron Production from Wire and Gas Z-Pinchs on the Sphinx Pulsed Power Generator**
P.L. Coleman¹, A. Porte², F. Zucchini², H. Calamy², G. Auriel², J. Thompson³, F. Bayol⁴, M. Krishnan⁵, K. Wilson⁵
¹*Consultant, Philomat, OR, USA*
²*Centre d’Etudes de Gramat, France*
³*Consultant, San Diego, CA, USA*
⁴*ITHPP, Thegra, France*
⁵*Alameda Applied Sciences Corp., San Leandro, CA, USA*
- 1P72 Recent Results for a 20 cm Diameter, Triple Shell Argon Z-Pinch on the Sphinx Pulsed Power Generator**
P.L. Coleman¹, H. Calamy², F. Lassalle², A. Loyer², A. Morell², F. Zucchini², M. Krishnan³, A. Bixler³, K. Champagne³, K. Wilson³, J. Thompson⁴
¹*Consultant, Philomat, OR, USA*
²*Centre d’Etudes de Gramat, France*
³*Alameda Applied Sciences Corp., San Leandro, CA, USA*
⁴*Consultant, San Diego, CA, USA*

Poster Session 1P (Monday, June 16, 13:00–14:00 • Poster Area – Foyer)
Nonequilibrium Plasma Applications

 Chair: *Michael G. Kong, University of Loughborough, UK*

- 1P73 Experimental Measurements of an Ionic Wind Generated by a Positive Corona Discharge**
 E. Karaks, A. Begum, M. Laroussi
Laser & Plasma Engineering Institute, Old Dominion University, Norfolk, VA, USA
- 1P74 Temperature-Dependent Transition of Discharge Pattern During Helium Cryo Plasma**
 J.H. Choi, Y. Noma, K. Terashima
Department of Advanced Materials Science, Graduate School of Frontier Sciences, The University of Tokyo, Japan
- 1P75 Energy Contribution in a DBD Reactor**
 S. Yao, S. Kodama, S. Yamamoto, Y. Fujioka
Research Institute of Innovative Technology for the Earth, Kyoto, Japan
- 1P76 Plasma-To-Flame Transition at the AC Driven Filamentary Discharge Ignition**
 F. Auzas¹, M. Makarov¹, A. Agneray¹, M. Bellenoué², J. Sotton², S. Labuda², V. Puech³, P. Tardiveau³
¹*Technocentre Renault S.A.S., Guyancourt, France*
²*LCD, UPR CNRS 9028, ENSMA, Futuroscope, France*
³*L.P.G.P., UMR8578, Université Paris-Sud, Orsay, France*
- 1P77 Nonlinear Dynamics in Dual Frequency Capacitive Discharges**
 D. Ziegler, T. Mussenbrock, R.P. Brinkmann
Institute for Theoretical Electrical Engineering, Ruhr-University Bochum, Germany
- 1P78 Time-Resolved Optical Emission Profiles of RF Atmospheric Pressure Plasmas: α and γ Modes**
 D. Liu, F. Iza, M.G. Kong
Loughborough University, Leicestershire, United Kingdom
- 1P79 Theoretical and Experimental Study of an Argon Free Burning Arc Discharge at Very High-Pressure and Low-Intensity**
 E. Izquierdo, J. Gonzalez-Aguilar, L. Fulcheri
Ecole des Mines de Paris, Sophia-Antipolis, France
- 1P80 Pulse Filamentary Discharge in Mixing Layer of Two Gases**
 S.B. Leonov, Y.I. Isaenkov, D.A. Yarantsev
Russian Academy of Sciences, Moscow, Russia
- 1P81 Calcium Filling of TiO₂ Nanotubes on the Surface of NiTi Shape Memory Alloys by Plasma Immersion Ion Implantation**
 X.M. Liu¹, S. Wu¹, P.K. Chu¹, T. Hu¹, C.L. Chu^{1,2}, K.W.K. Yeung¹, C.Y. Chung¹, W.W. Lu³, K.M.C. Cheung³, K.D.K. Luk³
¹*Department of Physics and Material Science, City University of Hong Kong, Kowloon, Hong Kong*
²*School of Materials Science and Engineering, Southeast University, Nanjing, China*
³*Department of Orthopaedics and Traumatology, The University of Hong Kong, Pokfulam, Hong Kong*
- 1P82 Deposition of Diamond-Like Carbon Films Using Hollow Cathode Plasma Source**
 H.F. Jiang^{1,3}, X.B. Tian^{1,2}, S.Q. Yang^{1,2}, R.K.Y. Fu³, P.K. Chu³
¹*School of Materials Science and Engineering, Harbin Institute of Technology, China*
²*Shenzhen Key Lab of Composite Materials, Shenzhen Tech Innovation International, China*
³*Department of Physics and Materials Science, City University of Hong Kong, Kowloon, Hong Kong*
- 1P83 Microstructure and Mechanical Characterization of HVOF Sprayed Boride-Based Cermet Coatings**
 H. Lv¹, M. Xu², P.K. Chu², J. Wang¹, B. Sun¹
¹*State Key Laboratory of Metal Matrix Composites, Shanghai Jiao Tong University, China*
²*Department of Physics and Materials Science, City University of Hong Kong, Kowloon, Hong Kong*
- 1P84 Contributions to the Synthesis of Thin Organic Films Via Low-Pressure Non-Equilibrium Plasma Deposition**
 M.I. Totolin, I. Neamtu, D. Filip, I. Stoica, D. Macocinschi
 "Petru Poni" Institute of Macromolecular Chemistry, Iasi, Romania
- 1P85 Optical and Electrical Diagnostics on a Long Atmospheric Pressure Cold Plasma Plume**
 X. Lu, Z. Jiang, Q. Xiong, Z. Tang, X. Hu, Y. Pan
 College of Electrical and Electronic Engineering, Huazhong University of Science and Technology, HuBei, China

- 1P86 Study of Kinetic Processes in Inductive Coupled Plasma in Methane**
N.V. Denisova, V. Fomin, B. Postnikov
Institute of Theoretical and Applied Mechanics, Novosibirsk, Russia
- 1P87 Formation of TiC Coatings by High Energy Plasma Focus Carbon Ion Beams**
H. Bhuyan, M. Favre, A. Henriquez, E. Valderrama, H. Chuaqui, E. Wyndham
Physics Department, Pontificia Universidad Católica de Chile, Santiago, Chile
- 1P88 Surface Barrier Discharge Assisted Deposition of Water Repellent Films From N₂/HMDSO Mixtures on Surface of Poplar Veneer**
M. Odraskova^{1,2}, P. Stahel¹, M. Smolar³
¹*Masaryk University, Brno, Czech Republic*
²*Wonkwang University, Iksan, South Korea*
³*Slovak Pulp and Paper Research Institute, Bratislava, Slovak Republic*
- 1P89 Low Temperature Plasma Discharge Power for Surface Treatment of Polyethylene Fiber**
X. Jiang, Y. Rui
College of Mechanical & Electric Eng., Soochow University, Jiangsu, China
- 1P90 Microwave Atmospheric Discharge for Materials Processing**
H. Song¹, J.M. Hong², K.H. Lee², J.J. Choi³
¹*Department of Electrical and Computer Engineering, University of Colorado, Colorado Springs, CO, USA*
²*Plasma Systems and Materials INC., Gyonggi-do, South Korea*
³*Department of Wireless Communication Engineering, Kwangwoon University, Seoul, South Korea*
- 1P91 Effects of Plasma Treatment on Amorphous and Semicrystalline Polymer**
I. Junkar, K. Eleršič, A. Vesel, J. Kovač, M. Mozetič, U. Cvelbar
Jozef Stefan Institute, Ljubljana, Slovenia
- 1P92 Electric Arc Plasma Generator of Alternating Current on Steam-Air Mixtures for Plasmachemical Applications**
P.G. Rutberg, K.A. Kuzmin, G.V. Nakonechny, S.D. Popov, A.A. Safronov, E.O. Serba, A.V. Surov
Institute for Electrophysics and Electric Power, Russian Academy of Sciences, St.-Petersburg, Russia
- 1P93 Plasma Catalytic Module for Oil Residuals Firing Based on High-Frequency Torch Discharge**
Y.D. Korolev¹, A.G. Karengin²
¹*Institute of High Current Electronics, Tomsk, Russia*
²*Tomsk Polytechnical University, Russia*
- 1P94 Plasma Decontamination of Chemical & Biological Warfare Agents by a Cold Arc Plasma Jet at Atmospheric Pressure**
M.H. Han, J.H. Noh, K.W. Park, H.S. Hwang, H.K. Baik
Department of Advanced Materials Science & Engineering, Yonsei University, Seoul, Korea
- 1P95 Polymerization and Nano Composite Deposition by Atmospheric Pressure Plasma (APPECVD)**
A. Gulec¹, L. Oksuz¹, A. Uygun²
¹*Suleyman Demirel University, Dept. of Physics, Isparta, Turkey*
²*Suleyman Demirel University, Dept. of Chemistry, Isparta, Turkey*
- 1P96 Electrical and Optical Characteristics of Atmospheric Pressure Plasma Enhanced Chemical Vapor Deposition (APPECVD) System**
L. Oksuz¹, A. Gulec¹, K. Ozaltin¹, K. Akkaya¹, G. Erkmen¹, A. Uygun²
¹*Suleyman Demirel University, Dept. of Physics, Isparta, Turkey*
²*Suleyman Demirel University, Dept. of Chemistry, Isparta, Turkey*
- 1P97 Surface Wave Microplasma for Localized Etching**
J.J. Narendra¹, J. Zhang¹, T.A. Grotjohn^{1,2}, N. Xi¹, J. Asmussen^{1,2}
¹*Michigan State University, Department of Electrical & Computer Engineering, East Lansing, MI, USA*
²*Fraunhofer USA, Center for Coatings and Laser Applications, MI, USA*

Poster Session 1P (Monday, June 16, 13:00–14:00 • Poster Area – Foyer)
Medical, Biological and Environmental Applications I

Chair: Mounir Laroussi, Old Dominion University, VA, USA

- 1P98 Production of Hydrogen Rich Gas in Compact Plasma Reformers**
 A. Rabinovich¹, M. Gallagher¹, A. Gutsol¹, A. Fridman¹, A. Samokhin², N. Alexeev², A. Peschkoff³
¹Drexel Plasma Institute, Philadelphia, USA
²Institute of Metallurgy and Material Sciences, Moscow, Russia
³NanoEnergy Group LTD, UK
- 1P99 Decontamination of Drinking Water Using a Pulsed Spark Plasma Discharge**
 K.P. Arjunan¹, V. Vasilets¹, A. Gutsol¹, Y. Cho¹, A. Fridman¹, S. Anandan²
¹Drexel Plasma Institute, Drexel University, Philadelphia, PA, USA
²Department of Bioscience and Biotechnology, Drexel University, Philadelphia, PA, USA
- 1P100 Toxicity Analysis of Direct Nonthermal Plasma Treatment of Living Tissue**
 S. Kalghatgi¹, D. Dobrynin², A. Wu³, R. Sensenig³, G. Fridman⁴, M. Balasubramanian⁵, K. Barbee⁴,
 A. Brooks³, A. Fridman², G. Friedman¹
¹Department of Electrical and Computer Engineering, Drexel University, Philadelphia, PA, USA
²Department of Mechanical Engineering and Mechanics, Drexel University, Philadelphia, PA, USA
³Department of Surgery, Drexel University College of Medicine, Philadelphia, PA, USA
⁴School of Biomedical Engineering, Science and Health, Drexel University, Philadelphia, PA, USA
⁵Department of Pathology, Drexel University College of Medicine, Drexel University, Philadelphia, PA, USA
- 1P101 Non-Ionizing Radiation Generated by Nanosecond Pulsed Electric Fields (nsPEFs) Induce Apoptosis in Cancer in Vivo**
 S.J. Beebe, X. Chen, J.F. Kolb, K.H. Schoenbach
 Frank Reidy Research Center for Bioelectrics, Old Dominion University, Norfolk, VA, USA
- 1P102 On the Electroporation of Mash for the Production of Red Wine**
 M. Sack¹, C. Eing¹, R. Stängle¹, A. Wolf¹, G. Müller¹, J. Sigler², L. Stukenbrock²
¹Research Center Karlsruhe (FZK), IHM, Germany
²Staatliches Weinbauinstitut, Freiburg, Germany
- 1P103 Pulsed Electric Discharges in Water: Results and Prospects**
 P.G. Rutberg, V. Gorjachev, V.A. Kolikov, V.N. Snetov, A.Yu. Stogov
 Institute for Electrophysics and Electric Power, Russian Academy of Science, St. Petersburg, Russia
- 1P104 Interaction of Oxide Nanoparticles with Serum of Human Blood**
 P.G. Rutberg¹, V.A. Kolikov¹, V.N. Snetov¹, A.Yu. Stogov¹, L.A. Noskin², S.B. Landa², A.V. Arutjunan²,
 V.V. Egorov³, A.K. Sirotkin³
¹Institute for Electrophysics and Electric Power, Russian Academy of Science, St. Petersburg, Russia
²Institute for Nuclear Physics, Russian Academy of Science, Gatchina, Russia
³Institute for Influenza, Russian Academy of Medicine Science, St. Petersburg, Russia
- 1P105 Transmembrane Potential Measurements on Plant Cells Using the Voltage Sensitive Dye Annine-6**
 B. Flickinger, Th. Berghöfer, C. Eing, C. Gusbeth, R. Sträßner, W. Frey
 Research Center Karlsruhe (FZK), IHM, Germany
- 1P106 Transmembrane Potential Measurements on Mammalian Cells Using the Voltage Sensitive Dye Annine-6**
 Th. Berghöfer¹, C. Eing¹, B. Flickinger¹, W. Frey¹, C. Gusbeth¹, S. Schneider², R. Sträßner¹
¹Research Center Karlsruhe (FZK), IHM, Germany
²Research Center Karlsruhe (FZK), ITG, Germany
- 1P107 On the Use of Imaging Ellipsometry for the Monitoring of Protein Removal by Means of Low-Pressure Inductively Coupled Plasma Discharges**
 O. Kylián, K. Stapelmann, H. Rauscher, F. Rossi
 Institute for Health and Consumer Protection, Joint Research Centre, Ispra, Italy
- 1P108 Chemical Modification of Aqueous Solutions Via Direct Injection of Plasma Activated Species**
 M. Begliarbekov¹, H. Zhang¹, S. O'Sullivan¹, V. Tarnovsky¹, C. Christodoulatos²
¹Dept. of Physics & Engineering Physics, Stevens Institute of Technology, Hoboken, NJ, USA
²Center for Environmental Systems, Stevens Institute of Technology, Hoboken, NJ, USA

1P109 Effects of Electrochemical Processes in DC Diaphragm Discharge in Water Solution of Textile Dye Direct Blue 106

Z. Stara, J. Davidova, B. Olexova, F. Krcma, I. Soral

Faculty of Chemistry, Brno University of Technology, Czech Republic

1P110 The Physics and Chemistry of Electrical Discharges in Saline Solutions and their Use in Electrosurgical Applications

J. Woloszko, K.R. Stalder

ArthroCare Corp., Sunnyvale, CA, USA

Oral Sessions on Monday Afternoon, June 16

Oral Session 2A (Monday, June 16, 15:30–18:00 • Club Room)

Computational Plasma Physics I

Chair: John Luginsland, NumerEx, NY, USA

- 2A1 Fold Points and Singularities in Hall MHD Differential Algebraic Equations (Invited Keynote)**
 15:30 W. Marszalek
 –16:00 *DeVry University, North Brunswick, NJ, USA*
- 2A2 Multiscale Discontinuous Galerkin Methods for Coupled MHD-Kinetic Plasma Simulations (Invited Keynote)**
 16:00
 –16:30 J.A. Rossmannith, E.A. Johnson
Mathematics, University of Wisconsin, Madison, WI, USA
- 2A3 Simulation of Thermodynamic Properties of Dense Deuterium Plasma by Monte Carlo Methods**
 16:30
 –16:45 P.R. Levashov¹, V.S. Filinov¹, A. Botan¹, V. Fortov¹, M. Bonitz²
¹*Joint Institute for High Temperatures, Moscow, Russia*
²*Institut für Theoretische Physik und Astrophysik, Kiel, Germany*
- 2A4 Quantum Dynamics in Wigner and Tomography Representations**
 16:45 V.S. Filinov^{1,3}, G. Schubert², P.R. Levashov¹, H. Fehske², M. Bonitz³, V. Fortov¹
 –17:00 ¹*Joint Institute for High Temperatures, Russian Academy of Sciences, Moscow, Russia*
²*Institut für Physik, Ernst-Moritz-Arndt-Universität, Greifswald, Germany*
³*Christian-Albrechts-Universität zu Kiel, Institut für Theoretische Physik und Astrophysik, Germany*
- 2A5 A High-Order Scheme for Collisional-Radiative and Non-Equilibrium Plasma (Invited Keynote)**
 17:00
 –17:30 J.-L. Cambier, M.G. Kapper
Air Force Research Laboratory, Edwards AFB, CA, USA
- 2A6 A Space-Time Expansion Discontinuous Galerkin Scheme with Local Time-Stepping for the Ideal and Viscous MHD Equations (Invited Keynote)**
 17:30
 –18:00 Ch. Altmann, G. Gassner, F. Lörcher, C.-D. Munz
Institut für Aerodynamik und Gasdynamik, Universität Stuttgart, Germany

Oral Session 2B (Monday, June 16, 15:30–18:00 • Room 2.05)*Fast Wave Devices I*Chair: *Stefano Alberti, EPFL Lausanne, Switzerland*

- 2B1 Progress of High Power Gyrotron Development in JAEA (Invited Keynote)**
 15:30 K. Sakamoto, A. Kasugai, K. Kajiwara, K. Takahashi, N. Kobayashi, Y. Oda
 –16:00 *JAEA, Naka, Japan*
- 2B2 Recent Improvements on the 170GHz, 1.5MW Coaxial Cavity Gyrotron at FZK**
 16:00 S. Kern¹, T. Rzesnicki¹, O. Dumbrajs³, J. Flamm², G. Gantenbein¹, S. Illy¹, J. Jin¹, B. Piosczyk¹, O. Prinz²,
 –16:15 M. Thumm^{1,2}
¹*Research Center Karlsruhe (FZK), IHM, Germany*
²*University of Karlsruhe, IHE, Germany*
³*University of Technology, Helsinki, Finland*
- 2B3 Status of Development of the 2MW, 170GHz Coaxial-Cavity Gyrotron for ITER**
 16:15 S. Alberti¹, F. Albajar², K.A. Avramides³, P. Benin⁴, T. Bonicelli², S. Cirant⁵, E. Droz¹, O. Dumbrajs⁶,
 –16:30 D. Fasel¹, T. Goodman¹, J.-P. Hogge¹, S. Illy⁷, S.K. Jawla¹, J. Jin⁷, S. Kern⁷, C. Liévin⁴, B. Marlétaz¹,
 P. Marmillod¹, I.G. Pagonakis¹, A. Perez¹, B. Piosczyk⁷, L. Porte¹, T. Rzesnicki⁷, U. Siravo¹, M. Thumm⁷,
 M. Tran¹
¹*Centre de Recherche en Physique des Plasmas, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland*
²*The European Joint Undertaking for ITER and the Development of Fusion Energy, Barcelona, Spain*
³*School of Electrical and Computer Engineering, National Technical University of Athens, Athens, Greece*
⁴*Thales Electron Devices, Vélizy, France*
⁵*Instituto Di Fisica Del Plasma Consiglio Nazionale Delle Ricerche, Milano, Italy*
⁶*Helsinki University of Technology, Espoo, Finland*
⁷*Research Center Karlsruhe (FZK), IHM, Germany*
⁸*University of Karlsruhe, IHE, Germany*
- 2B4 Hysteresis in Mode Competition in the High Power 170 GHz CW Gyrotron for ITER**
 16:30 O. Dumbrajs¹, T. Idehara²
 –16:45 ¹*Helsinki University of Technology, Finland*
²*University of Fukui, Japan*
- 2B5 Development and Demonstration of a Multi-Megawatt 95 GHz Gyrotron Oscillator**
 16:45 M. Blank, P. Borchard, P. Cahalan, S. Cauffman, K. Felch, H. Jory
 –17:00 *CPI, Microwave Power Products Division, Palo Alto, CA, USA*
- 2B6 Recent Results in High Power Gyrotron Development for W7-X at FZK**
 17:00 G. Gantenbein¹, H. Braune², G. Dammertz¹, V. Erckmann², S. Illy¹, S. Kern¹, W. Kasperek³, H.P. Laqua²,
 –17:15 C. Lechte³, F. Legrand⁴, W. Leonhardt¹, C. Liévin⁴, G. Michel², B. Piosczyk¹, O. Prinz⁵, M. Schmid¹,
 M. Thumm^{1,5}
¹*Research Center Karlsruhe (FZK), IHM, Germany*
²*Max-Planck-Institut für Plasmaphysik, Teilinstitut Greifswald, Germany*
³*Institut für Plasmaforschung, Universität Stuttgart, Germany*
⁴*Thales Electron Devices, Velizy-Villacoublay, France*
⁵*University of Karlsruhe, IHE, Germany*
- 2B7 How to Avoid Excitation of Parasitic Modes in MW-Class Gyrotrons?**
 17:15 G.S. Nusinovich¹, O. Sinityn¹, T.M. Antonsen¹, A.N. Vlasov²
 –17:30 ¹*University of Maryland, College Park, MD, USA*
²*SAIC, Mc Lean, VA, USA*
- 2B8 Recent Development of the Step-Tunable Gyrotron at FZK**
 17:30 O. Prinz^{1,2}, A. Arnold^{1,2}, J. Flamm^{1,2}, G. Gantenbein², M. Thumm^{1,2}
 –17:45 ¹*University of Karlsruhe, IHE, Germany*
²*Research Center Karlsruhe (FZK), IHM, Germany*
- 2B9 Studies on a 127.5 GHz, 1.0-1.3 MW, Longpulse Start-Up Gyrotron for ITER**
 17:45 M.V. Kartikeyan¹, A. Kumar¹, E. Borie², M. Thumm^{2,3}
 –18:00 ¹*Department of Electronics and Computer Engineering, IITR, Roorkee, India*
²*Research Center Karlsruhe (FZK), IHM, Germany*
³*University of Karlsruhe, IHE, Germany*

Oral Session 2C (Monday, June 16, 15:30–18:00 • Hebel Saal)*Fast Z-Pinches and X-Ray Lasers I*Chair: *Alexander Chuvatin, Ecole Polytechnique Palaiseau, France*

- 2C1 Plasma Density Measurements Within Tungsten Wire-Array Z-Pinches on the Cobra Accelerator**
 15:30
 –15:45 J.D. Douglass, D.A. Hammer, R.D. McBride, K.S. Bell, P.F. Knapp, J.B. Greenly, S.A. Pikuz, T.A. Shelkovenko
Laboratory of Plasma Studies, Cornell University, Ithaca, NY, USA
- 2C2 The Role of Magnetic Topology Change in Development of Ablation Streams in Wire Arrays**
 15:45
 –16:00 J.B. Greenly, C.E. Seyler, M.R. Martin
Laboratory of Plasma Studies, Cornell University, Ithaca, NY, USA
- 2C3 On the Validation of a 3D Inflow Model for Simulating Wire Array Z-Pinches, Z-Pinch Energetics, and Scaling of Radiated Power with Current (Invited Keynote)**
 16:00
 –16:30 R.W. Lemke, E.M. Waisman, D.B. Sinars, E.P. Yu, T.A. Haill, T.A. Brunner, H.L. Hanshaw, M.E. Cuneo, M.P. Desjarlais, T.A. Mehlhorn
Sandia National Laboratories, Albuquerque, NM, USA
- 2C4 Ablation From Multiwire Arrays Made of Fusible Metals (Invited Keynote)**
 16:30
 –17:00 P.V. Sasorov
Institute for Theoretical and Experimental Physics, Moscow, Russia
- 2C5 Radiative and Dynamics Features of Uniform and Combined Multi-Plane Planar Wire Arrays Studied on 1 MA UNR Generator**
 17:00
 –17:15 V.L. Kantsyrev¹, A.S. Safronova¹, A.A. Esaulov¹, K.M. Williamson¹, M.F. Yilmaz¹, N.D. Ouart¹, I. Shrestha¹, G.C. Osborne¹, V. Shlyaptseva¹, M. Weller¹, A.S. Chuvatin², L.I. Rudakov³
¹ *University of Nevada, Reno, USA*
² *Ecole Polytechnique, Paris, France*
³ *Icarus Inc., USA*
- 2C6 Analysis of New Multiple Material Wire- Array Experiments on 1-MA Generators Including the Study of Hot Spots**
 17:15
 –17:30 A.S. Safronova¹, V.L. Kantsyrev¹, A.A. Esaulov¹, M.F. Yilmaz¹, N.D. Ouart¹, G.C. Osborne¹, K.M. Williamson¹, I. Shrestha¹, R.D. McBride², P.F. Knapp², K.S. Bell², J.B. Greenly², D.A. Hammer², B.R. Kusse²
¹ *University of Nevada, Reno, NV, USA*
² *Cornell University, Ithaca, NV, USA*
- 2C7 Measurement of the Time- and Axially- Resolved Temperature of an Argon Z-Pinch**
 17:30
 –17:45 P.L. Coleman¹, K. Wilson¹, D.G. Phipps²
¹ *Alameda Applied Sciences Corporation, San Leandro, CA, USA*
² *Naval Research Laboratory, Washington DC, USA*
- 2C8 Capillary Z-Pinch for Recombination Pumping of EUV Lasers**
 17:45
 –18:00 P. Vrba¹, J. Hübner¹, M. Vrbova²
¹ *Institute of Plasma Physics, Czech Technical University, Prague, Czech Republic*
² *CTU Faculty of Biomedical Engineering, Kladno, Czech Republic*

Oral Session 2D (Monday, June 16, 15:30–18:00 • Mombert Saal)*Medical, Biological and Environmental Applications I*Chair: *Jean-Michel Pouvesle, University of Orleans, France***2D1 Sterilization and Decontamination of Medical Instruments by Low Pressure Plasma Discharges: Application of Ternary Mixtures (Invited Keynote)**15:30
–16:00 O. Kylián, K. Stapelmann, F. Rossi
*European Commission, Joint Research Centre, IHCP, Ispra, Italy***2D2 Pulsed Atmospheric-Pressure Cold Plasma for Endodontic Disinfection (Invited Keynote)**16:00 Ch. Jiang¹, P.T. Vernier¹, M.-T. Chen¹, Y.-H. Wu¹, L.L. Wang², M.A. Gundersen¹
–16:30 ¹*Department of EE - Electrophysics, University of Southern California, Los Angeles, CA, USA*
²*School of Dentistry, University of Southern California, Los Angeles, CA, USA***2D3 Surface Decontamination Using Atmospheric Oxygen-Argon Plasma**16:30 P.C. Guschi¹, R.F. Hicks^{1,2}, M.A. Sloan³
–16:45 ¹*Surfx Technologies LLC, Culver City, CA, USA*
²*Chemical Engineering Department, University of California - Los Angeles (UCLA), CA, USA*
³*Conceptual Mindworks, Inc., Brooks City-Base, TX, USA***2D4 Toxicity of Non-Thermal Plasma Treatment of Endothelial Cells**16:45 S. Kalghatgi, G. Friedman, G. Fridman, A. Morss Clyne
–17:00 *Drexel University, Philadelphia, PA, USA***2D5 The Impact of Cold Atmospheric Plasmas on Microbially Contaminated Raw Plant Foods**17:00 D.L. Bayliss¹, G. Shama², M.G. Kong¹
–17:15 ¹*Department of Electronic & Electrical Engineering, Loughborough University, Leicestershire, UK*
²*Department of Chemical Engineering, Loughborough University, Leicestershire, UK***2D6 Sterilization Efficacy of Dielectric Barrier Discharge on Non-Uniform Surfaces**17:15 H. Ayan¹, A. Gutsol¹, A. Fridman¹, G. Friedman², G. Fridman³
–17:30 ¹*Department of Mechanical Engineering and Mechanics, College of Engineering, Drexel University, Philadelphia, PA, USA*
²*Department of Electrical and Computer Engineering, College of Engineering, Drexel University, Philadelphia, PA, USA*
³*School of Biomedical Engineering, Science, and Health Systems, Drexel University, Philadelphia, PA, USA***2D7 Physical and Biological Mechanisms of Plasma Interaction with Living Tissue**17:30 G. Fridman¹, D. Dobrynin², G. Friedman³, A. Fridman²
–17:45 ¹*Biomedical Engineering, Drexel University, Philadelphia, PA, USA*
²*Mechanical Engineering and Mechanics, Drexel University, Philadelphia, PA, USA*
³*Electrical and Computer Engineering, Drexel University, Philadelphia, PA, USA***2D8 A Long Atmospheric Pressure Cold Plasma Plume for Biomedical Applications**17:45 X. Lu, Q. Xiong, Z. Tang, Z. Jiang, X. Hu, Y. Pan
–18:00 *College of Electrical and Electronic Engineering, Huazhong University of Science and Technology, HuBei, China*

Oral Session 2E (Monday, June 16, 15:30–18:00 • Room 2.08)*Nonequilibrium Plasma Applications II*Chair: *Dorothee V. Szabo, Research Center Karlsruhe, Germany*

- 2E1 Investigation on Microwave Plasma Diamond Etching**
 15:30 D.T. Tran¹, C. Fansler¹, T.A. Grotjohn^{1,2}, D.K. Reinhard^{1,2}, J. Asmussen^{1,2}
 –15:45 ¹ *Michigan State University, MI, USA*
² *Fraunhofer Center for Coatings and Laser Applications, MI, USA*
- 2E2 Arc-PVD Coating of Powders in a Microwave Plasma Fluidized Bed**
 15:45 Z. Pajkic, M. Willert-Porada
 –16:00 *Chair of Materials Processing, University of Bayreuth, Germany*
- 2E3 Influences of Gas Flow on Atmospheric Pressure Glow Discharge in Helium**
 16:00 H. Luo, Z. Liang, B. Lv, X. Wang, Z. Guan, L. Wang
 –16:15 *Department of Electrical Engineering, Tsinghua University, Beijing, China*
- 2E4 Study of a DBD Plasma Actuator Dedicated to Airflow Separation Control**
 16:15 B. Dong¹, D. Hong¹, J.-M. Pouvesle¹, V. Boucinha², R. Weber², A. Leroy²
 –16:30 ¹ *GREMI, UMR6606 CNRS/Université d'Orléans, France*
² *LME, Université d'Orléans, France*
- 2E5 Dissociation of H₂S in Non-Equilibrium Gliding Arc “Tornado” Discharge**
 16:30 T.P. Nunnally, A. Rabinovich, A. Gutsol, A. Fridman, A. Polevich
 –16:45 *Drexel University, Philadelphia, PA, USA*
- 2E6 Determination of Ionization Coefficient of Atmospheric Helium in Dbd**
 16:45 Z. Liang, H. Luo, B. Lv, X. Wang, Z. Guan, L. Wang
 –17:00 *Department of Electrical Engineering, Tsinghua University, Beijing, China*
- 2E7 Atmospheric DBD Plasma Jet and its Application to Materials Surface Modification**
 17:00 X. Tang^{1,2,3}, G. Qiu^{1,2,3}, C. Li¹
 –17:15 ¹ *Plasma & Surface Research Center, College of Science, Donghua University, Shanghai, China.*
² *National Engineering Research Center for Dyeing and Finishing of Textiles, Shanghai, China*
³ *College of Material Science and Engineering, Donghua University, Shanghai, China*
- 2E8 Efficient Full-Spectrum White Polymer Light-Emitting Diodes by Plasma Polymerization**
 17:15 C.C. Chang¹, Y.H. Chang¹, J.H. Jou¹, K.C. Hwang², A.C.-M. Yang¹
 –17:30 ¹ *Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan*
² *Department of Chemistry, National Tsing Hua University, Hsinchu, Taiwan*
- 2E9 Electrical and Optical Characterization of a Wide Plasma Brush in Atmospheric Helium Flow**
 17:30 Z. Cao, J.L. Walsh, M.G. Kong
 –17:45 *Dept. of Electronic and Electrical Eng., Loughborough University, UK*
- 2E10 The Science of Low Temperature Plasmas in Industrial Applications**
 17:45 M. Umair
 –18:00 *NED University of Engineering and Technology, Karachi, Pakistan*

Oral Sessions on Tuesday Morning, June 17

Oral Session 3A (Tuesday, June 17, 09:30–12:00 • Club Room)

Intense Electron and Ion Beams

Chair: Georg Müller, Research Center Karlsruhe, Germany

3A1 Generation and Transport of Pulsed Intense Electron Beams of Microsecond Duration09:30 **(Invited Keynote)**–10:00 V. Engelko¹, G. Müller²¹Efremov Institute of Electrophysical Apparatus, Saint Petersburg, Russia²Research Center Karlsruhe (FZK), IHM, Germany**3A2 Simulation of Cygnus Rod-Pinch Diode Using Radiographic Chain Model (Invited Keynote)**

10:00 T.J.T. Kwan, T.-S.F. Wang

–10:30 Applied Physics Division, Los Alamos National Laboratory, NM, USA

3A3 Transport of Intense Beam Pulses Through Background Plasma

10:30 I. Kaganovich, A.B. Sefkow, E.A. Startsev, R.C. Davidson

–10:45 Plasma Physics Laboratory, Princeton, NJ, USA

3A4 Nonideal Effects in the Operation of a Paraxial Diode with Gas Cell Focusing10:45 D.R. Welch¹, N. Bruner¹, D.V. Rose¹, K. Hahn², B.V. Oliver²–11:00 ¹Voss Scientific, Albuquerque, NM, USA²Sandia National Laboratories, Albuquerque, NM, USA**3A5 Bremstrahlung Target Optimization for Reflex Triodes**11:00 S.B. Swanekamp^{1,2}, B. Weber¹, D. Mosher¹, S.J. Stephanakis¹–11:15 ¹Naval Research Laboratory, Washington, DC, USA²L3 Communications, Reston, VA, USA**3A6 Anode Plasma Formation in a Diode with Carbon Fiber Cathode**11:15 V. Vekselman¹, J.Z. Gleizer¹, J. Felsteiner¹, Ya.E. Krasik¹, L. Liu²–11:30 ¹Physics Department, Technion, Haifa, Israel²National University of Defense Technology, Changsha, China**3A7 Generation of Supershort Avalanche Electron Beams in Nanosecond Discharges in High-Pressure Gases**

11:30 V.F. Tarasenko, E.H. Baksht, A.G. Burachenko, I.D. Kostyrya, M.I. Lomaev, D.V. Rybka

–11:45 High Current Electronics Institute, Tomsk, Russia

3A8 Experiments on Pulse Elongation of High-Power Microsecond E-Beam for Plasma Heating in Multi Mirror Trap GOL-311:45 A.V. Arzhannikov², V.T. Astrelin², V.V. Belykh², A.V. Burdakov¹, V.G. Ivanenko¹, I.A. Ivanov¹,–12:00 M.A. Makarov¹, S.L. Sinitzky², V.D. Stepanov²¹Budker Institute of Nuclear Physics, Novosibirsk, Russia²Novosibirsk State University, Russia

Oral Session 3B (Tuesday, June 17, 09:30–12:00 • Room 2.05)

Fast Wave Devices II

Chair: Monica Blank, CPI Palo Alto, CA, USA

- 3B1 Material Aspects of High Power Microwave Windows (Invited Keynote)**
 09:30 V.V. Parshin¹, A.L. Vikharev¹, R. Heidinger², A. Meier², T.A. Scherer², B.M. Garin³, J.M. Dutta⁴
 –10:00 ¹Institute of Applied Physics of Russian Academy of Sciences, Nizhny Novgorod, Russia
²Research Center Karlsruhe (FZK), Institute for Materials Research I, Germany
³Institute of Radio Engineering and Electronics of Russian Academy of Sciences, Moscow Region, Russia
⁴Department of Physics North Carolina Central University, Durham, NC, USA
- 3B2 Microwave Testing of a CVD Diamond Torus Window Prototype for ITER**
 10:00 T.A. Scherer¹, R. Heidinger¹, A. Meier¹, K. Takahashi², K. Kajiwara², K. Sakamoto²
 –10:15 ¹Research Center Karlsruhe (FZK), IMF, Germany
²Japan Atomic Energy Agency, Naka, Japan
- 3B3 Measurements and Analysis of Advanced Field Emission Cold Cathodes**
 10:15 X. He, J. Scharer, J.H. Booske, N. Sule, S. Sengele
 –10:30 University of Wisconsin-Madison, WI, USA
- 3B4 Effect of Ion Bombardment on Emission Characteristics of Gyrotron Cathodes**
 10:30 O.I. Louksha¹, G.G. Sominski¹, D.B. Samsonov¹, G. Dammertz², B. Piosczyk², M. Thumm²
 –10:45 ¹St. Petersburg State Polytechnical University, Russia
²Research Center Karlsruhe (FZK), IHM, Germany
- 3B5 Influence of the Quasi-Elastically Reflected Electrons on the Collector Properties of Powerful Gyrotrons**
 10:45 V.N. Manuilov¹, R.V. Khrustalev¹, N.I. Zaitsev²
 –11:00 ¹Nizhny Novgorod State University, Russia
²Institute of Applied Physics RAS, Nizhny Novgorod, Russia
- 3B6 Development of THz Gyrotrons in FIR FU for Application to High Power THz Technologies**
 11:00 T. Idehara, I. Ogawa, H. Mori, S. Kobayashi, L. Agusu, Y. Tatematsu, S. Mitsudo, T. Saito
 –11:15 Research Center for Development of Far Infrared Region, University of Fukui, Japan
- 3B7 Analysis of a 34 GHz Peniotron Oscillator**
 11:15 L.J. Dressman¹, S.B. Harriet¹, N.C. Luhmann²
 –11:30 ¹NSWC Crane and UC Davis, Davis, CA, USA
²UC Davis, Davis, CA, USA
- 3B8 Transient Response of a X-Band Magnicon Amplifier**
 11:30 S.H. Gold¹, A.W. Fliflet¹, A.K. Kinkead²
 –11:45 ¹Plasma Physics Division, Naval Research Laboratory, Washington, DC, USA
²Icarus Research, Bethesda, MD, USA
- 3B9 Control of Sase Power and Enhancement of FEL Coherence by Plasma Wave Dilation**
 11:45 A. Gover
 –12:00 Tel-Aviv University, School of Electrical Engineering, Israel

Oral Session 3C (Tuesday, June 17, 09:30–12:00 • Hebel Saal)*Plasma Lasers and Switching*Chair: *Andreas Görtler, Coherent GmbH, Munich, Germany*

- 3C1 Excimer-Laser-Driven EUV Plasma Source for Single-Shot Lithography (Invited Keynote)**
 09:30 P.D. Lazzaro
 –10:00 *ENEA Frascati Research Centre, Italy*
- 3C2 Technical Realisation of Excimer Lasers - an Overview**
 10:00 C.F. Strowitzki, A. Görtler, A. Matern
 –10:15 *Coherent GmbH, München, Germany*
- 3C3 Modeling of Dynamic Effects in a Laser-Driven Semiconductor Switch of Powerful Microwave Radiation**
 10:15
 –10:30 M.L. Kulygin, G.G. Denisov, V.V. Kocharovskiy
Institute of Applied Physics Russian Academy of Sciences, Nizhny Novgorod, Russia
- 3C4 Optical and Electrical Investigations of a High Power Lorentz Drift Based Gas Discharge Switch**
 10:30
 –10:45 M. Iberler, K. Esser, A. Fedjuschenko, C. Hock, J. Jacoby, B. Koubeck, B. Klump, B.J. Lee, J. Otto, M. Pfaff, T. Rienecker, A. Schoenlein
Institute for Applied Physics, J. W. Goethe University Frankfurt, Germany
- 3C5 Jitter and Recovery Rate of a 50 kV, 100 Hz Triggered Spark Gap with High Pressure Gas Mixtures**
 10:45
 –11:00 Y. Chen, J.J. Mankowski, J.W. Walter, J.C. Dickens
Texas Tech Center for Pulse Power and Power Electronics, Lubbock, TX, USA
- 3C6 High-Speed Motion Analysis of Surface Melting Phenomena of High-Current Vacuum Arcs**
 11:00 N. Wenzel¹, W. Wietzorek¹, W. Hartmann¹, A. Lawall², R. Renz²
 –11:15 ¹*Siemens AG, Corporate Technology, Erlangen, Germany*
²*Siemens AG, Power Transmission and Distribution, Berlin, Germany*
- 3C7 Pulse Shaping Experiments on the RITS-6 Accelerator**
 11:15 J.J. Leckbee¹, B.V. Oliver¹, S. Portillo¹, K. Hahn¹, M.D. Johnston¹, V. Bailey², P. Corcoran², D.L. Johnson²,
 –11:30 I.D. Smith²
¹*Sandia National Laboratories, Albuquerque, NM, USA*
²*L-3 Communications - Pulse Sciences, San Leandro, CA, USA*
- 3C8 Simulation of Switching Behavior of Free Burning Electric Arcs**
 11:30 Y. Lee¹, M. Specht², U. Riechert², M. Kudoke²
 –11:45 ¹*ABB Switzerland Ltd., Corporate Research, Baden-Dättwil, Switzerland*
²*ABB Switzerland Ltd., High Voltage Products, Zürich, Switzerland*
- 3C9 Numerical Simulation of Electrode Erosion Phenomenon in Low Pressure Subnanosecond Spark Gaps**
 11:45
 –12:00 E. Hashemi, K. Niayesh, E. Agheb, J. Jadidian, A.A. Shayegani-Akmal
School of Electrical and Computer Engineering, University of Tehran, Iran

Oral Session 3D (Tuesday, June 17, 09:30–12:30 • Mombert Saal)

Bioelectrics

Chair: Wolfgang Frey, Research Center Karlsruhe, Germany

- 3D1 Electrochemotherapy: A New Treatment for Cutaneous and Subcutaneous Tumor Lesions (Invited Keynote)**
09:30
–10:00 L.M. Mir
Institute Gustave-Roussy, University Paris-Sud, Villejuif, France
- 3D2 Double Pulse Approach of Eletrogenotherapy: an Analysis at the Single Cell Level (Invited Keynote)**
10:00
–10:30 E. Bellard, J. Teissié
IPBS Universite P Sabatier CNRS, Toulouse, France
- 3D3 Focusing Impulse Radiating Antenna for Medical Imaging**
10:30
–10:45 K.H. Schoenbach, S. Xiao, J.T. Camp, J.F. Kolb
Frank Reidy Research Center for Bioelectrics, Old Dominion University, Norfolk, VA, USA
- 3D4 Plasma Decontamination at Atmospheric Pressure - Basics and Applications**
10:45
–11:00 K.-D. Weltmann, R. Brandenburg, J. Ehlbeck, R. Foest, E. Kindel, M. Stieber, T.v. Woedtke
INP Greifswald, Germany
- 3D5 Pulsed Electric Fields (PEF) Applications in Food Processing - Process and Equipment Design and Cost Analysis.**
11:00
–11:15 S. Toepfl, V. Heinz
German Institute of Food Technologies (DIL), Quakenbrueck, Germany
- 3D6 Sterilization of Bacterial Spore Using Intense Nanosecond Pulsed Electric Fields with a Pressurized Flow System**
11:15
–11:30 S. Katsuki¹, J. Choi¹, T. Namihira¹, H. Akiyama¹, H. Seta², H. Matsubara², T. Saeki²
¹*Kumamoto University, Japan*
²*Suntory Limited, Kawasaki, Japan*
- 3D7 Improving Germination Rate of Soybeans as a Biofuel Resource**
11:30
–11:45 N. Parsi¹, S.R. Gyawali¹, N. Boriraksantikul¹, P. Kirawanich¹, N.E. Islam¹, M.S. Pathan², D. Sleper²
¹*Electrical and Computer Engineering Department, University of Missouri, Columbia, MO, USA*
²*Division of Plant Sciences, University of Missouri, Columbia, MO, USA*
- 3D8 Transmembrane Potential Measurements of Mammalian and Plant Cells**
11:45
–12:00 Th. Berghöfer¹, C. Eing¹, B. Flickinger¹, C. Gusbeth¹, R. Sträßner¹, W. Frey¹, S. Schneider²
¹*Research Center Karlsruhe (FZK), IHM, Germany*
²*Research Center Karlsruhe (FZK), Institute for Toxicology and Genetics, Germany*
- 3D9 First Response of Mammalian Cells to Nanosecond Pulsed Electric Fields**
12:00
–12:15 J.F. Kolb, J. Zhuang, J.A. White, S.S. Scarlett, K.H. Schoenbach
Old Dominion University, Frank Reidy Research Center for Bioelectrics, Norfolk, VA, USA
- 3D10 Optimization of the Pulsed Electric Field Decontamination Method in Continous Flow**
12:15
–12:30 C. Gusbeth¹, W. Frey¹, R. Sträßner¹, T. Schwartz², A. Rieder²
¹*Research Center Karlsruhe (FZK), IHM, Germany*
²*Research Center Karlsruhe (FZK), Institut für Technische Chemie Bereich Wasser- und Geotechnologie, Germany*

Oral Session 3E (Tuesday, June 17, 09:30–12:00 • Room 2.08)*High-Pressure and Thermal Plasma Processing I*Chair: *Joachim V.R. Heberlein, University of Minnesota, MN, USA*

- 3E1 Present Knowledge in Suspension Plasma Spraying (Invited Keynote)**
 09:30 P. Fauchais¹, G. Montavon¹, A. Denoirjean¹, V. Rat¹, J.-F. Coudert¹, H. Ageorges¹, A. Bacciochini¹,
 –10:00 E. Brousse¹, G. Darut¹, N. Caron², K. Wittmann-Ténèze²
¹SPCTS - UMR CNRS 6638, Faculty of Sciences, University of Limoges, France
²LPTH - CEA Le Ripault, Monts, France
- 3E2 High Pressure Microwave Plasma Assisted CVD Synthesis of Diamond (Invited Keynote)**
 10:00 K.W. Hemawan¹, T.A. Grotjohn¹, J. Asmussen^{1,2}
 –10:30 ¹Department of Electrical & Computer Engineering, Michigan State University, East Lansing, MI, USA
²Fraunhofer Center for Coatings and Laser Applications
- 3E3 Effect of In-Flight Particle Temperature on the Microstructure and Gas Tightness of Atmospheric Plasma-Sprayed YSZ Coating**
 10:30 C. Zhang¹, M. Planche¹, H. Liao¹, C. Coddet¹, C.-J. Li²
 –10:45 ¹LERMPS, Université de Technologie de Belfort-Montbéliard, Belfort, France
²State Key Laboratory for Mechanical Behaviour of Materials, Xi'an Jiaotong University, Shaanxi, China
- 3E4 In-Flight Melting of Granulated Powders by 12-Phase AC Arc Discharge for Glass Production**
 10:45 T. Watanabe¹, Y. Yao¹, K. Yatsuda¹, F. Funabiki², T. Yano²
 –11:00 ¹Dept. Environmental Chemistry and Engineering, Tokyo Institute of Technology, Yokohama, Japan
²Dept. Chemistry and Materials Science, Tokyo Institute of Technology, Tokyo, Japan
- 3E5 Behaviors of Excited N, N₂⁺ and NH in Modulated Induction Thermal Plasmas**
 11:00 Y. Tanaka, K. Hayashi, T. Ito, Y. Uesugi
 –11:15 Division of Electrical Engineering and Computer Science, Kanazawa University, Japan
- 3E6 Quantifying Instabilities of a Plasma Cutting Arc Through Analysis of Schlieren Images**
 11:15 S.J. Kim, J.V.R. Heberlein
 –11:30 University of Minnesota, Minneapolis, MN, USA
- 3E7 Greener Steel Making Process by Microwave Irradiation with Discharges (Invited Keynote)**
 11:30 M. Sato¹, K. Nagata², A. Matsubara¹, S. Takayama¹
 –12:00 ¹National Institute for Fusion Science, Gifu, Japan
²Graduated School of Science and Engineering, Tokyo Institute of Technology, Tokyo, Japan

Poster Session on Tuesday, June 17

Poster Session 2P (Tuesday, June 17, 13:00–14:00 • Poster Area – Foyer)

Computational Plasma Physics

Chair: Claus-Dieter Munz, University of Stuttgart, Germany

- 2P1 Analysis and Simulation of Pseudospark Discharge**
X. Gu, L. Meng, Y. Sun, X. Yu, G. Song, J. Yang
School of Physics Electronics, University of Electronic Science and Technology of China, Chengdu, China
- 2P2 Stochastic Heating in Capacitively Coupled Plasmas**
M. Bayrak, R.P. Brinkmann
Department for Theoretical Electrical Engineering, Ruhr University, Bochum, Germany
- 2P3 Fully Electromagnetic Particle-In-Cell Simulations of a Deuterium Gas Puff Z-Pinch**
D.R. Welch¹, D.V. Rose¹, W.A. Stygar², R.J. Leeper²
¹*Voss Scientific, Albuquerque, NM, USA*
²*Sandia National Laboratories, Albuquerque, NM, USA*
- 2P4 Kinetic Simulations of Neutral Loading Processes in Electron Cyclotron Resonance Ion Sources (ECRIS)**
P. Messmer, P.J. Mullaney, D. Fillmore
Tech-X Corporation, Boulder, CO, USA
- 2P5 Comparisons and Applications of the Full Two-Fluid Plasma Model to Asymptotic Two-Fluid Models**
B. Srinivasan, U. Shumlak
Aerospace and Energetics Research Program, University of Washington, Seattle, WA, USA
- 2P6 Vlasov Simulation of Electron Hole Propagation in Plasmas with Super-Thermal Particles**
H. Abbasi, N. Javaheri
Amirkabir University of Technology, Tehran, Iran
- 2P7 Vlasov Simulation of Self Induced Transparency in Laser-Plasma Interaction**
H. Abbasi, S. Rahimi
Faculty of Physics, Amirkabir University of Technology, Tehran, Iran

Poster Session 2P (Tuesday, June 17, 13:00–14:00 • Poster Area – Foyer)

Fast Wave Devices

Chair: Jean-Philippe Hogge, EPFL Lausanne, Switzerland

- 2P8 Preliminary Numerical Study of the Beam Neutralization Effect in the EU 170 GHz, 2 MW Coaxial Gyrotron**
I.G. Pagonakis¹, S. Alberti¹, J.-P. Hogge¹, K.A. Avramides², B. Piosczyk³
¹*Centre de Recherche en Physique des Plasmas, EPFL, Switzerland*
²*School of Electrical and Computer Engineering, National Technical University of Athens, Greece*
³*Research Center Karlsruhe (FZK), IHM, Germany*
- 2P9 Electron-Beam Modeling in Gyrotron Interaction Simulations**
K.A. Avramides¹, J.L. Vomvoridis¹, S. Kern², I.G. Pagonakis³
¹*School of Electrical and Computer Engineering, National Technical University of Athens, Greece*
²*Research Center Karlsruhe (FZK), IHM, Germany*
³*CRPP, École Polytechnique Fédéral De Lausanne, Switzerland*
- 2P10 Beam Profile Measurements of the Output Microwave Beam of 2 MW/170 GHz Coaxial-Cavity Gyrotron for ITER**
S.K. Jawla¹, J.-P. Hogge¹, T. Goodman¹, S. Alberti¹, B. Piosczyk², T. Rzesnicki², C. Liévin³
¹*Centre de Recherche en Physique des Plasmas, EPFL, Lausanne*
²*Research Center Karlsruhe (FZK), IHM, Germany*
³*Thales Electron Devices, Vélizy-Villacoublay, France*
- 2P11 Improved Launcher/Mode Converter for Coaxial Cavity ITER Gyrotron**
J. Jin¹, M. Thumm^{1,2}, B. Piosczyk¹, T. Rzesnicki¹, J. Flamm^{1,2}
¹*Research Center Karlsruhe (FZK), IHM, Germany*
²*University of Karlsruhe, IHE, Germany*

- 2P12 Mode Competition in Coaxial Cavity Gyrotrons**
G.I. Zaginaylov¹, V.I. Tkachenko¹, V.V. Kamyschan², K. Schuenemann³
¹*NSC Karkov Institute for Physics and Technology, Ukraine*
²*Kharkov National University, Ukraine*
³*Technical University Hamburg-Harburg, Germany*
- 2P13 Non-Linear Theory of CRM Instability in Plasma-Filled Gyrotron**
G.I. Zaginaylov¹, V.I. Shcherbinin¹, K. Schuenemann²
¹*NSC Kharkiv Institute of Physics and Technology, Ukraine*
²*Technische Universität Hamburg-Harburg, Germany*
- 2P14 Design Studies of a 42 GHz, 200-250 KW, CW/Longpulse Gyrotron**
M.V. Kartikeyan¹, A. Kumar¹, E. Borie², S. Illy², B. Piosczyk², M. Thumm^{2,3}
¹*Department of Electronics and Computer Engineering, IITR, Roorkee, India*
²*Research Center Karlsruhe (FZK), IHM, Germany*
³*University of Karlsruhe, IHE, Germany*
- 2P15 Design of a Low-Power High-Frequency Gyrotron for DNP-Enhanced NMR Spectroscopy**
M.F. Silva¹, S. Alberti¹, J. Ansermet², K.A. Avramides³, G. Bodenhausen⁴, J.-P. Hogge¹, I.G. Pagonakis³, D. Wagner⁵
¹*Centre de Recherche en Physique des Plasmas, EPFL, Lausanne, Switzerland*
²*Institut de Physique des Nanostructures, EPFL, Lausanne, Switzerland*
³*School of Electrical and Computer Engineering, National Technical University of Athens, Greece*
⁴*Institut des Sciences et Ingénierie Chimiques, EPFL, Lausanne, Switzerland*
⁵*Max-Planck-Institut für Plasmaphysik, Garching, Germany*
- 2P16 Multimode Calculations of Frequency Tunable Gyrotrons for Dynamic Nuclear Polarization Applications**
Y. Liu^{1,2}, S. Kern², M.H. Beringer², M. Thumm^{2,3}, S. Alberti⁴, J.-P. Hogge⁴
¹*University of Electronic Science and Technology of China, Chengdu, China*
²*Research Center Karlsruhe (FZK), IHM, Germany*
³*University of Karlsruhe, IHE, Germany*
⁴*Centre de Recherche en Physique des Plasmas, EPFL, Switzerland*
- 2P17 394.6 GHz CW Gyrotron FU CW II for DNP/NMR at 600 MHz**
T. Idehara¹, I. Ogawa¹, S. Kobayashi¹, L. Agusu¹, S. Mitsudo¹, T. Saito¹, T. Fujiwara², H. Takahashi²
¹*Research Center for Development of Far Infrared Region, University of Fukui, Japan*
²*Institute of Protein Research, Osaka University, Japan*
- 2P18 Frequency Tunable Gyrotrons for Sub-THz CW Radiation Sources of DNP-NMR Experiment**
T. Idehara¹, I. Ogawa¹, S. Kobayashi¹, L. Agusu¹, S. Mitsudo¹, T. Saito¹, T.H. Chang², C.C. Chiu²
¹*Research Center for Development of Far Infrared Region, University of Fukui, Japan*
²*Department of Physics, National Tsing Hua University, Hsinchu, Taiwan*
- 2P19 Fundamental Electronic Properties of Materials for Terahertz Vacuum Electron Devices**
B.B. Yang, K.J. Willis, I. Knezevic, S.C. Hagness, F. Cerrina, D.W. van der Weide, J.H. Booske
University of Wisconsin-Madison, Department of Electrical and Computer Engineering, Madison, WI, USA
- 2P20 Millimeter and Sub-Millimeter Radiation From a Unique Compact Oscillator**
K. Bishofberger, B.E. Carlsten, R. Faehl
Los Alamos National Laboratory, Los Alamos, NM, USA

Poster Session 2P (Tuesday, June 17, 13:00–14:00 • Poster Area – Foyer)

Intense Electron and Ion Beams

Chair: Georg Müller, Research Center Karlsruhe, Germany

- 2P21 Recent Paraxial Diode Experiments on RITS-6**
K. Hahn¹, B.V. Oliver¹, S. Cordova¹, M.D. Johnston¹, J.J. Leckbee¹, I. Molina¹, S. Portillo¹, D.J. Bittlestone², G. Cooper², J. McLean², N. Bruner³, D.V. Rose³, D.R. Welch³, E. Schamiloglu⁴
¹*Sandia National Laboratories, Albuquerque, NM, USA*
²*Atomic Weapons Establishment, Berkshire, UK*
³*Voss Scientific, Albuquerque, NM, USA*
⁴*Department for Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, USA*

- 2P22 Design of a Toroidal Cathode Negative Polarity Re-Entrant Rod Pinch Diode for Operation at 2-3MV**
 J. Threadgold¹, P. Martin¹, A. Jones¹, D.J. Bittlestone¹, N. Strong¹, N. Bruner², D.R. Welch², D.V. Rose²
¹ *AWE Aldermaston, Reading, Berkshire, UK*
² *Voss Scientific, Albuquerque, NM, USA*
- 2P23 Impedance Collapse and Beam Generation in a High Power Planar Diode**
 A. Roy, R. Menon, S. Mitra, D.D.P. Kumar, S. Kumar, A. Sharma, K.C. Mittal, K.V. Nagesh, D.P. Chakravarthy
Accelerator and Pulse Power Division, Bhabha Atomic Research Centre, Mumbai, India
- 2P24 Particle in Cell Simulations of a Tom Martin Diode**
 S.W. Vickers
Pulsed Power Group, AWE, Berkshire, UK
- 2P25 Characterization of an Intense Electron Beam Driven by Cesar a 600 kV 300 kA Pulsed Power Generator**
 L. Voisin, D. Hebert, T. Desanlis, A. Galtie
CEA/Centre d'Etudes Scientifiques et Techniques d'Aquitaine, Le Barp, France
- 2P26 Effect of Cathode Diameter on Beam Generation in the Presence of Prepulse**
 A. Roy, R. Menon, S. Mitra, D.D.P. Kumar, S. Kumar, A. Sharma, K.C. Mittal, K.V. Nagesh, D.P. Chakravarthy
Accelerator and Pulse Power Division, Bhabha Atomic Research Centre, Mumbai, India
- 2P27 Ionization Evolution in Low-Pressure Air Irradiated by a ~70-kV Electron Beam**
 D. Hinshelwood¹, S.L. Jackson¹, D. Mosher¹, P.F. Ottinger¹, S.B. Swanekamp¹, S.J. Stephanakis¹,
 B. Weber¹, C.A. Coverdale², M.L. Kiefer², T.D. Pointon², D.B. Seidel²
¹ *Naval Research Laboratory, Washington, DC, USA*
² *Sandia National Laboratories, Albuquerque, NM, USA*
- 2P28 Cold Test of Compact C-Band Standing-Wave Accelerating Structures**
 S.H. Kim^{1,2}, H.R. Yang¹, M. Cho¹, W. Namkung¹, Y.J. Park², S.J. Park², J.S. Oh²
¹ *POSTECH, Pohang, Korea*
² *Pohang Accelerator Laboratory, Pohang, Korea*
- 2P29 Commissioning of L-Band Intense Electron Linac for Industrial Applications**
 S.H. Kim¹, H.R. Yang¹, M. Cho¹, W. Namkung¹, S.D. Jang², S.J. Kwon², Y.G. Son², S.J. Park², J.S. Oh²
¹ *POSTECH, Pohang, Korea*
² *Pohang Accelerator Laboratory, Pohang, Korea*
- 2P30 The Darht II Accelerator Beam Position Monitor System**
 J.B. Johnson¹, C.A. Ekdahl¹, W.B. Broste²
¹ *Los Alamos National Laboratory, Los Alamos, NM, USA*
² *National Security Technologies Inc., Los Alamos, NM, USA*
- 2P31 High Current Multicapillary Dielectric Cathodes**
 J.Z. Gleizer, Y. Hadas, V.T. Gurovitch, J. Felsteiner, Ya.E. Krasik
Physics Department, Technion, Haifa, Israel
- 2P32 Investigation of Plasma Formation and Propagation in Relativistic Electron Beam Diodes**
 M.D. Johnston¹, B.V. Oliver¹, S. Portillo¹, T.A. Mehlhorn¹, D.R. Welch², D.V. Rose², N. Bruner²,
 D. Droemer³, Y. Maron⁴, E. Klodzh⁴, V. Bernshtam⁴, E. Stambulchik⁴, A.D. Heathcote⁵, A.D.J. Critchley⁵
¹ *Sandia National Laboratories, Albuquerque, NM, USA*
² *Voss Scientific, Albuquerque, NM, USA*
³ *National Security Technologies, LLC, Las Vegas, NV, USA*
⁴ *Weizmann Institute of Science, Rehovot, Israel*
⁵ *Atomic Weapons Establishment, United Kingdom*
- 2P33 Optical Emission Observations of Self Magnetic Pinch (SMP) Diode Driven by the RITS-6 Accelerator**
 A.D. Heathcote¹, A.D.J. Critchley¹, M.D. Johnston²
¹ *Atomic Weapons Establishment Aldermaston, Berkshire, United Kingdom*
² *Sandia National Laboratories, Albuquerque, NM, USA*
- 2P34 Features of Superdense Electron Beam Interaction with Plasma in a Waveguide**
 H.R. Avagyan¹, S.V. Hovasapyan¹, E.V. Rostomyan²
¹ *Yerevan State University, Armenia*
² *Institute of Radiophysics & Electronics Armenian National Ac. Sci, Ashtarack, Armenia*

- 2P35 Optical Investigation of Plasma Formation Process by Interaction of Intense Electron Beams with Metallic Targets**
 W. An¹, V. Engelko², G. Müller¹, A. Weisenburger¹
¹Research Center Karlsruhe (FZK), IHM, Germany
²Efremov Institute of Electrophysical Apparatus, Saint Petersburg, Russia
- 2P36 Overview on Applications of Materials Modified by Intense Pulsed Electron Beams**
 W. An¹, V. Engelko², A. Heinzel¹, A. Jianu¹, F. Lang¹, G. Müller¹, A. Weisenburger¹, F. Zimmermann¹
¹Research Center Karlsruhe (FZK), IHM, Germany
²Efremov Institute of Electrophysical Apparatus, Saint Petersburg, Russia
- 2P37 Nanosecond Imaging of Relativistic Electron Transport in a Paraxial Diode Gas Cell**
 D.J. Bittlestone, G. Cooper, J. McLean
 Pulsed Power Group, AWE, Reading, UK
- 2P38 Electron Beam Propagation in a Coaxial Drift Cavity with Split-Foil**
 H. Wang, B. Qian
 National University of Defense Technology, Changsha, China
- 2P39 Emittance Growth During Bunch Compression of Intense Particle Beams**
 S. Kinoshita, M. Kobayashi, M. Nakajima, K. Horioka
 Department of Energy Sciences, Tokyo Institute of Technology, Japan
- 2P40 Magnetic High Current Ion Storage Ring**
 M. Droba, N. Joshi, U. Ratzinger
 Institute for Applied Physics, Frankfurt a.M., Germany
- 2P41 Development and Consideration of Compact Neutron Generator**
 Y. Taniuchi, M. Utsumi, K. Taira
 Tokai University, Hiratsuka, Japan

Poster Session 2P (Tuesday, June 17, 13:00–14:00 • Poster Area – Foyer)

Fast Z-Pinches and X-Ray Lasers II

Chair: Michael E. Cuneo, Sandia National Laboratories, NM, USA

- 2P42 Analysis of New Cu Precursor Wire Array Experiments on the 1-MA Pulsed Power Generator at UNR**
 N.D. Quart¹, A.S. Safronova¹, V.L. Kantsyrev¹, A.A. Esaulov¹, M.F. Yilmaz¹, K.M. Williamson¹, G.C. Osborne¹, I. Shrestha¹, C.A. Coverdale², C. Deeney³
¹University of Nevada, Reno, NV, USA
²Sandia National Laboratories, Albuquerque, NM, USA
³National Nuclear Security Administration, U.S. Department of Energy, Washington DC, USA
- 2P43 Wire Array Z-Pinch Implosion Dynamics and Radiation with a 1D Ablation Model**
 J.L. Giuliani¹, J.W. Thornhill¹, B.M. Jones², D.J. Ampleford², M.E. Cuneo², C.A. Coverdale²
¹Naval Research Laboratory, Washington, DC, USA
²Sandia National Laboratories, Albuquerque, NM, USA
- 2P44 Radial and Axial Variation of Stagnated Plasma Conditions and Opacity Studies for K-Shell X-Ray Sources at the Z Accelerator**
 C.A. Coverdale¹, C. Deeney², J.P. Apruzese³, B.M. Jones¹, P.D. Lepell⁴
¹Sandia National Labs, Albuquerque, NM, USA
²NNSA, DOE Headquarters, Washington, DC, USA
³Naval Research Laboratory, Washington, DC, USA
⁴Ktech Corporation, Albuquerque, NM, USA
- 2P45 Characterization of a 12-cm-Diameter, Triple-Shell Gas Puff Nozzle for Argon Z-Pinch Experiments at 6 MA**
 S.L. Jackson¹, B. Weber¹, D. Mosher¹, D.G. Phipps¹, S.J. Stephanakis¹, R.J. Comisso¹, N. Qi²
¹Naval Research Laboratory, Washington, DC, USA
²L-3 Communications, San Leandro, CA, USA

- 2P46 Results from Recent Argon-Gas-Puff Experiments at ~ 6 MA**
 R.J. Commisso¹, J.P. Apruzese¹, S.L. Jackson¹, D. Mosher¹, D.P. Murphy¹, D.G. Phipps¹, B. Weber¹, P.L. Coleman², K. Wilson², N. Qi³, C.A. Coverdale⁴, B.M. Jones⁴, K. Mikkelsen⁴
¹Naval Research Laboratory, Washington, DC, USA
²Alameda Applied Sciences Corporation, San Leandro, CA, USA
³L-3 Communications, Pulsed Sciences Division, San Leandro, CA, USA
⁴Sandia National Laboratories, Albuquerque, NM, USA
- 2P47 Fluorescence and Interferometry Measurements for Determining the r,z Density Distribution in a Gas-Puff Z-Pinch Load**
 E. Kroupp¹, G. Rozenzweig¹, D. Osin¹, D. Alumot¹, R. D'Arcy¹, Y. Maron¹, A. Fisher², R.A. Commisso³, D. Mosher³, B. Weber³, S.L. Jackson³, C. Deeney⁴
¹Faculty of Physics, Weizmann Institute of Science, Israel
²Faculty of Physics, Technion, Haifa, Israel
³Naval Research Laboratory, USA
⁴Department of Energy, USA
- 2P48 Investigation of Nested Type X Pinches with ~ 1 MA Current**
 S.A. Pikuz¹, T.A. Shelkovenko¹, R.D. McBride¹, J.D. Douglass¹, H. Wilhelm¹, D.A. Hammer¹, D.B. Sinars²
¹Cornell University, Ithaca, NY, USA
²Sandia National Laboratories, Albuquerque, NM, USA
- 2P49 Soft X-Rays Sources of X-Pinch Type Based on the Supersonic Gas Jets**
 A.S. Boldarev¹, V.A. Gasilov¹, S.V. D'yachenko¹, E.L. Kartasheva¹, O.G. Olkhovskaya¹, A.Y. Krukovskii¹, V.V. Alexandrov², I.A. Barykov², G.S. Volkov², V.I. Zayatsev²
¹Institute for Mathematical Modelling IMM RAS, Moscow, Russia
²TRINITI, Troitsk, Russia
- 2P50 Hard X-Rays and High-Current Electron Beams From X-Pinches**
 A.V. Agafonov¹, V.M. Romanova¹, A.R. Mingaleev¹, T.A. Shelkovenko², S.A. Pikuz², I.C. Blesener², B.R. Kusse², D.A. Hammer²
¹P.N. Lebedev Physical Institute of RAS, Moscow, Russia
²Cornell University, Ithaca, NY, USA
- 2P51 Lower Bounds for the Kinetic Energy and Resistance for Z-Pinches on Z**
 E.M. Waisman, M.E. Cuneo, B.M. Jones, M. Jones, R.W. Lemke, D.B. Sinars, W.A. Stygar
 Sandia National Laboratories, Albuquerque, NM, USA
- 2P52 Radial Foil Z-Pinch Experiments on the MAGPIE Generator**
 F. Suzuki-Vidal, S.V. Lebedev, S.N. Bland, J.P. Chittenden, G.N. Hall, A. Harvey-Thompson, A.M. Marocchino, C. Ning, G. Swaddling
 Imperial College, London, United Kingdom

Poster Session 2P (Tuesday, June 17, 13:00–14:00 • Poster Area – Foyer)

High-Pressure and Thermal Plasma Processing

Chair: Joachim V.R. Heberlein, University of Minnesota, MN, USA

- 2P53 Formation of Superpower Volume Discharges and Their Application for Modification Surface of Metals**
 V.F. Tarasenko, M.A. Shulepov
 High Current Electronics Institute, Tomsk, Russia
- 2P54 Alloying and Modification of Material Surface Layers Under Pulsed Plasma Treatment**
 V.A. Makhlay, A.N. Bandura, O.V. Byrka, V.V. Cheborarev, V.D. Fedorchenko, I.E. Garkusha, A.V. Medvedev, V.I. Tereshin
 Institute of Plasma Physics, NSC Kharkov Institute of Physics and Technology, Ukraine
- 2P55 Generation of Diffuse Air Plasmas at Atmospheric Pressure Using Nanosecond Repetitively Pulsed Discharges**
 D. Paj, D.A. Lacoste, C.O. Laux
 Ecole Centrale Paris, Châtenay-Malabry, France
- 2P56 In Situ Removal of Amorphous Carbon From Single-Walled Carbon Nanotubes Synthesized by Induction Thermal Plasma**
 A. Shahverdi, K.S. Kim, Y. Alinejad, G. Soucy
 Chemical and Biotechnological Engineering, Université de Sherbrooke, Canada

- 2P57 Modeling of Continuous Synthesis of Single-Walled Carbon Nanotubes by RF Induction Thermal Plasma**
K.S. Kim¹, G. Soucy¹, A. Moradian², J. Mostaghimi²
¹*Chemical and Biotechnological Engineering, Université de Sherbrooke, Canada*
²*Department of Mechanical and Industrial Engineering, University of Toronto, Canada*
- 2P58 Microstructure and Mechanical Properties of Lanthanum Silicate Coatings Prepared by Atmospheric Plasma Spraying**
W. Gao^{1,2}, H. Liao¹, C. Coddet¹
¹*LERMPS, University of Technology of Belfort-Montbéliard, Belfort, France*
²*National Lab of Superhard Materials, Jilin University, Changchun, China*
- 2P59 Direct Decomposition of Anesthetic Gas by Atmospheric Multi-Gas Inductively Coupled Plasma**
Y. Goto¹, R. Sasaki¹, E. Hotta¹, A. Okino¹, H. Miyahara²
¹*Dept. of Energy Sciences, Tokyo Tech, Yokohama, Japan*
²*Research laboratory for Nuclear Reactors, Tokyo Tech, Tokyo, Japan*
- 2P60 Investigation of Power Arc Plasma Generators of Alternating Current for Plasma Chemical Applications.**
A.A. Safronov, I.I. Kumkova, R.V. Ovchinnikov, A.V. Pavlov, S.D. Popov, V.A. Spodobin, A.V. Surov
Institute for Electrophysics and Electric Power, Russian Academy of Science, St. Petersburg, Russia
- 2P61 Improvement of De-NO_x Efficiency by NTPT and Aerosol Driven Process Associated with Oxidation by Ni Catalyst**
D. Azuma, H. Takano, M. Itoh
Department of Chemical Engineering and Materials Science, Doshisha University, Kyoto, Japan
- 2P62 Vortex Structures in Heat Plasma Flows, Modeling of the Heat Flow Vector and Calculations of the Correlation Coefficients**
V. Nenicka, J. Sonsky
Institute of Thermomechanics AS CR, Prague, Czech Republic
- 2P63 On Possibilities to Characterize Turbulence in Plasma Torches by Correlation Dimensions**
J. Gruber, J. Hlina, J. Sonsky
Institute of Thermomechanics, Academy of Sciences of the Czech Republic, Prague, Czech Republic
- 2P64 Investigation of the Process of Microwave Iron-Production with the Integrated Microscopic Imaging Spectrometer**
A. Matsubara¹, K. Nakayama¹, T. Kaneba¹, M. Tomimoto¹, S. Okajima¹, S. Takayama², K. Ida², M. Sato²
¹*Chubu University, Aichi, Japan*
²*National Institute for Fusion Science, Gifu, Japan*
- 2P65 CCD Imaging of Dielectric Barrier Discharges in Air: Plasma Self Organization**
K. Allegraud, S. Celestin, O. Guaitella, A. Rousseau
LPTP, Ecole Polytechnique, CNRS, France
- 2P66 O Atoms Losses Compared to C₂H₂ Losses on TiO₂ Surface After Plasma Exposure: an Explanation for Plasma/TiO₂ Synergy**
O. Guaitella, C. Lazzaroni, K. Allegraud, A. Rousseau
LPTP, Ecole Polytechnique, CNRS, France
- 2P67 Surface Treatment of Tape Substrates Using Atmospheric Pressure Low Temperature Plasma**
B.K. Min¹, K.H. Paek², J.H. Seo¹
¹*CPRI, Cheorwon-gun, Korea*
²*Plasnix Co. Ltd, Incheon, Korea*
- 2P68 Effect of Cathode Geometry on Modes of Current Transfer to Cathodes of High-Pressure Arc Discharges**
M.S. Benilov, M.D. Cunha, M.J. Faria
Departamento de Física, Universidade da Madeira, Funchal, Portugal

- 2P69 Formation of CaPO₄ and Suppression of Ni Leaching in Nitinol Using Oxygen and Sodium Plasma Immersion Ion Implantation**
 K.W.K. Yeung¹, Y.L. Chan³, W.W. Lu², K.D.K. Luk², D. Chan⁴, S. Wu¹, X.M. Liu¹, C.L. Chu¹, C.Y. Chung¹, P.K. Chu¹, K.M.C. Cheung²
¹Department of Physics and Materials Science, City University of Hong Kong, Kowloon, Hong Kong, China
²Department of Orthopaedics and Traumatology, University of Hong Kong, Pokfulam, Hong Kong, China
³Department of Mechanical Engineering, University of Hong Kong, Pokfulam, Hong Kong, China
⁴Department of Biochemistry, University of Hong Kong, Pokfulam, Hong Kong, China
- 2P70 Parameters Scan of Carbon Coatings on Silicon Substrate by Plasma Immersion Ion Implantation in a RF Plasma**
 E. Valderrama, J. Valenzuela, H. Bhuyan, M. Favre, E. Wyndham, H. Chuaqui
 Physics Department, Pontificia Universidad Católica de Chile, Santiago, Chile
- 2P71 Low Carbon Process Development for Iron Production**
 D.U. Kim, J.S. Hong, B.H. Chung, J.H. Jeon, K. Lee
 Korea Accelerator and Plasma Research Association, Cheorwon-gun, South Korea
- 2P72 A Thermal Non-Transfer Arc V-Type Torch Plasma**
 I.J. Van der Walt^{1,2}, J.L. Havengy¹, J.T. Nel¹
¹South Africal Nuclear Energy Corporation, Pretoria, Republic of South Africa
²South Africal Nuclear Energy Corporation, Gauteng, Republic of South Africa
- 2P73 Microwave Spark Plug**
 I.A. Kossyi¹, S.I. Gritsinin¹, A.M. Davydov¹, V.A. Vinogradov², Yu.M. Shikhman²
¹A.M.Prokhorov General Physics Institute of RAS, Moscow, Russia
²Central Institute of Aviation Motors, Moscow, Russia

Poster Session 2P (Tuesday, June 17, 13:00–14:00 • Poster Area – Foyer)

Plasmas for Lighting

Chair: Peter Flesch, OSRAM GmbH-Berlin, Germany

- 2P74 Investigation of the Cathodic Region of a Fluorescent Lamp**
 Z. Tlais, D. Buso, S. Bhosle, G. Zissis
 Universite de Toulouse, LAPLACE, CNRS-INP-UPS, Toulouse, France
- 2P75 Discharge Analysis and Electrical Modeling of a Coaxial Dielectric Barrier Discharge (DBD) Lamp**
 U.N. Pal¹, J.S. Soni¹, S. Kr¹, M. Kumar¹, A.K. Sharma¹, K. Frank²
¹Central Electronics Engineering Research Institute (CEERI), Pilani, India
²Physics Department, University of Erlangen, Germany
- 2P76 Theoretical and Experimental Investigations of a Dielectric Barrier Light Source**
 S. Beleznai¹, P. Richter¹, L. Balazs²
¹Budapest University of Technology and Economics, Hungary
²GE Consumer & Industrial – Lighting, Budapest, Hungary
- 2P77 Spatial Emission Behaviour of Dielectric Barrier Discharge Lamp Driven by Sinusoidal or Pulsed Voltage Excitation**
 B. Caillier¹, P. Guillot¹, L. Therese¹, T. Beaudette², P. Belenguer²
¹DPHE, Centre Universitaire - J.F. Champollion, Albi, France
²LAPLACE UMR 5213, Universite Paul Sabatier, Toulouse, France
- 2P78 Method to Measure the Inner Electrical Values of a DBD Including Space Charge Field**
 K.E. Trampert, M. Paravia, W. Heering
 Light Technology Institute, University of Karlsruhe, Germany
- 2P79 Measurements of the Electrical to VUV Conversion Efficiency in a Xenon Dielectric Barrier Discharge Lamp by Oxygen Actinometry**
 R.J. Carman, D.M. Kane, B.K. Ward
 Department of Physics, Macquarie University, Sydney, Australia
- 2P80 Characterization of the Electrode Erosion by Spectrum Analysis at Low Pressure Gas-Discharge Lamps**
 D. Boubetra, M. Bouafia
 Centre Universitaire BBA, Université de Setif, Algeria

- 2P81 A Study on the Plasma Characteristics of Inductively Coupled Electrode-Less Lamp**
 T. Uetsuki¹, M. Ueda¹, M. Saimi², H. Kakehashi²
¹*Tsuyama National College of Technology, Okayama, Japan*
²*Matsushita Electric Works Ltd., Osaka, Japan*
- 2P82 Dependence of Discharge Characteristics of Inductively Coupled Electrodeless Discharge on the Turns of the Excitation Coil**
 Y. Watanabe, T. Sakuma
Kanagawa University, Faculty of Engineering, Yokohama, Japan
- 2P83 Development of Planar Type Mercury-Free Lamp Excited by Microwave Surface Wave Plasma**
 A. Nazri, H. Sato, H. Motomura, M. Jinno
Department of Electrical and Electronic Engineering, Ehime University, Japan
- 2P84 Emission and Absorption Spectra of InBr in Low Pressure Discharges**
 S. Briefi¹, U. Fantz^{1,2}
¹*Lehrstuhl für Experimentelle Plasmaphysik, Universität Augsburg, Germany*
²*Max-Planck-Institut für Plasmaphysik, Garching, Germany*
- 2P85 A 150 GHz Interferometer for Investigations of Fluorescent Lamp Discharges**
 R.C. Garner
OSRAM Sylvania, Central Research and Services Laboratory, Beverly, MA, USA
- 2P86 Simulation of Electrode Material Deposition at the Tube Wall of a High-Pressure Mercury Arc Discharge Lamp**
 G.G. Bondarenko¹, M.R. Fisher², V.I. Kristya²
¹*Moscow State Institute of Electronics and Mathematics, Russia*
²*Kaluga Branch of Bauman Moscow State Technical University, Russia*
- 2P87 Power Balance of HID Lamp Electrodes Under HF Operation**
 J. Reinelt, M. Westermeier, P.P. Awakowicz, J. Mentel
Ruhr-University, Bochum, Germany
- 2P88 Theoretical Investigation of the Warm-Up Phase of a High Pressure Mercury Lamp**
 Z. Araoud¹, B.B. Hamida¹, K. Charrada¹, G. Zissis²
¹*Unité d'Étude des Milieux Ionisés et Réactifs, Monastir, Tunisia*
²*Laboratoire Plasma et Conversion d'Énergie, Toulouse, France*
- 2P89 The Gas-Phase Emitter Effect and the Formation of an Emitter-Spot-Attachment in Ceramic Metal Halide Lamps**
 M. Westermeier, O. Langenscheidt, J. Reinelt, J. Mentel, P.P. Awakowicz
Institute for Electrical Engineering and Plasma Technology, Ruhr-University Bochum, Germany
- 2P90 Investigation of Local Thermodynamic Equilibrium in HID Lamps**
 T. Nimalasuriya, A.J. Flikweert, W.J. Van Harskamp, X. Zhu, N. de Vries, M. Haverlag, W.W. Stoffels, J.J.A.M. van der Mullen
Applied Physics, Eindhoven University of Technology, The Netherlands

Poster Session 2P (Tuesday, June 17, 13:00–14:00 • Poster Area – Foyer)

Medical, Biological and Environmental Applications II

Chair: Mounir Laroussi, Old Dominion University, VA, USA

- 2P91 Feasibility Study of Atmospheric Pressure Plasma Treatments of HEPG-2 and SK-HEP-1 Cancer Cells**
 B. Gweon¹, D.B. Kim¹, S.Y. Moon¹, W. Choe¹, S. Song², D. Kim², J.H. Shin²
¹*KAIST, Department of Physics, Daejeon, Korea*
²*KAIST, Department of Mechanical Engineering, Daejeon, Korea*
- 2P92 Parametric Study for Bio-Plasma Plant Growth**
 J.H. Kim^{1,2}, K. Kim¹
¹*Korea Accelerator and Plasma Research Association, Physico Technology Lab., Kangwon, Republic of Korea*
²*GCT Semiconductor, Inc. Soc Division, Republic of Korea*

- 2P93 Surface Analysis of Damages on Escherichia Coli Caused by Oxygen Plasma Radicals**
K. Eleršič¹, Z. Vratnica^{1,2}, D. Vujošević^{1,2}, I. Junkar¹, J. Kováč¹, M. Mozetič¹, U. Cvelbar¹
¹F4 Plasma Lab, Jozef Stefan Institute, Ljubljana, Slovenia
²Institute for Public Health, Ljubljanska bb, Podgorica, Montenegro
- 2P94 Removal of Paper Microbial Contamination by Means of Dielectric Barrier Discharge**
J. Vrajova¹, I. Soural¹, F. Krcma¹, O. Novotny², P. Stahel²
¹Faculty of Chemistry, Brno University of Technology, Czech Republic
²Faculty of Science, Masaryk University, Brno, Czech Republic
- 2P95 Phenomenological Estimation of Sterilization Kinetics Using Dielectric Barrier Discharge**
H. Hasan^{1,3}, G. Fridman², M. Cooper¹, N. Vaze², A. Dolgopolsky³, A. Gutsol¹, A. Fridman²
¹Department of Mechanical Engineering & Mechanics, Drexel University, Philadelphia, PA, USA
²School of Biomedical Engineering, Science & Health Systems, Drexel University, Philadelphia, PA, USA
³Department of Mathematics, College of Arts & Sciences, Drexel University, Philadelphia, PA, USA
- 2P96 Cellulose Modification Study by E-Beam Irradiation & its Applications**
K. Lee, G. Lee, K. Han, J. Han, K. Chung
Korea Accelerator and Plasma Research Association, Cheorwon, South Korea
- 2P97 Catheter Inner Surface Metal Coating by Sputtering with Microplasma**
M. Chung¹, C.C. Chu^{2,3}
¹Dept. of Electronics Engineering, Southern Taiwan University, Tainan, Taiwan
²Dept. of Anesthesiology, Chi-Mei Medical Center, Tainan, Taiwan
³National Defense Medical Center, Taiwan
- 2P98 Bioactive Zirconia Thin Films Fabricated by Dual Cathodic Arc and Oxygen Plasma Deposition**
W. Li^{1,2}, X. Liu^{1,2,3}, A. Huang^{2,4}, P.K. Chu²
¹College of Materials Science and Engineering, Hunan University, Changhsa, China
²Department of Physics and Materials Science, City University of Hong Kong, Kowloon, Hong Kong
³Shanghai Institute of Ceramics, Chinese Academy of Sciences, China
⁴Beijing University of Aeronautics and Astronautics, China
- 2P99 Influence of Focused Shock Waves Upon a Sonosensitive Material**
P. Hoffer¹, P. Sunka¹, J. Straus¹, K. Kolacek¹, J. Benes², P. Pouckova²
¹Institute of Plasma Physics, Prague, Czech Republic
²Charles University, Prague, Czech Republic
- 2P100 Surface Characteristics of Pluronic-Based Polyurethanes**
D. Filip, G.E. Ioanid, A. Ioanid, D. Macocinschi
"Petru Poni" Institute of Macromolecular Chemistry, Iasi, Romania
- 2P101 Toxicity of Non-Thermal Dielectric Barrier Discharge Plasma Treatment of Endothelial Cells**
S. Kalghatgi, A. Morss Clyne, G. Friedman
Drexel University, Philadelphia, PA, USA
- 2P102 Atmospheric Oxygen-Helium Plasma Surface Modification of Medical Plastics**
P.C. Guschl¹, R.F. Hicks^{1,2}, S. MacDavid^{1,2}
¹Surfx Technologies LLC, Culver City, CA, USA
²Chemical Engineering Department, University of California, Los Angeles, USA

Poster Session 2P (Tuesday, June 17, 13:00–14:00 • Poster Area – Foyer)

Plasma Lasers and Switching

Chair: *Andreas Görtler, Coherent GmbH, Munich, Germany*

- 2P103 Design Criteria for Low-Scattering and Long-Lifetime Gas-Insulated Self-Breakdown Spark Gaps**
W. Frey, M. Sack, R. Wüstner, G. Müller
Research Center Karlsruhe (FZK), IHM, Germany
- 2P104 Designing of Distributed Triggered Switches**
S.V. Kladukhin
Institute of Electrophysics, Russian Academy of Sciences, Yekaterinburg, Russia

- 2P105 Next Step Progress of the Switching Capacity of Vacuum Interrupter and Plasma Opening Switch Combination**
O.G. Egorov
TRINITI, Moscow reg. Troitsk, Russia
- 2P106 Development of Plasma Channel in Subnanosecond Closing Switches**
E. Hashemi, K. Niayesh, J. Jadidian, E. Agheb
School of Electrical and Computer Engineering, University of Tehran, Iran
- 2P107 Influence of External Ultra High Axial Pulsed Magnetic Fields on High Current Vacuum Arcs**
J. Jadidian, K. Niayesh, E. Hashemi
School of Electrical and Computer Eng., University of Tehran, Iran
- 2P108 Theoretical Study of Magnetic and Shock Wave Pressure Effects on the Rail Gap Switch Surface Used at the Amirkabir Mather Type Plasma Focus Facility**
R. Amrollahi, M. Habibi
Amirkabir University of Technology, Tehran, Iran
- 2P109 Spark Gap Resistance of an Electrostatic Discharge at Different Pressures**
O. Diaz¹, V. Cooray¹, F. Román²
¹*Uppsala University, Uppsala, Sweden*
²*National University fo Colombia, Bogotá, Colombia*
- 2P110 Numerical Studies on Dynamical Resistance of Gap Switch**
L.S. Wang
Electromagnetic Survivability & Vulnerability Assessment Division, White Sands Missile Range, NM, USA
- 2P111 Using of FEM Method for Design and Prediction of Static Behavior of Three Electrode Mid-Plane Spark Gap**
M.M.D. Attaran, S. Toroghi
Company Inc., PulseNiru, Teheran, Iran
- 2P112 Numerical Simulations of Explosive Arc Suppression Used in Fast Fault Current Limiters**
K. Niayesh, J. Jadidian, E. Hashemi, E. Agheb, A.A. Shayegani-Akmal
School of Electrical and Computer Eng., University of Tehran, Iran

Oral Sessions on Tuesday Afternoon, June 17

Oral Session 4A (Tuesday, June 17, 15:30–18:00 • Club Room)

Space Plasmas and Partially Ionized Plasmas

Chair: Ralf Peter Brinkmann, Ruhr-University Bochum, Germany

- 4A1 Perpendicular Diffusion Coefficients and Newton-Lorentz Equation**
 15:30 A. Dosch, A. Shalchi
 –15:45 Ruhr University Bochum, Institute for Theoretical Physics Iv: Space and Astro Physics, Germany
- 4A2 Cosmic Ray Diffusion Approximation with Weak Adiabatic Focusing**
 15:45 R. Schlickeiser
 –16:00 Ruhr-Universität Bochum, Institut für Theoretische Physik, Germany
- 4A3 Unfolding Spectral Patterns Induced by Artificial Weakly Relativistic Beam in the Ionosphere**
 16:00 A. Kiraga, Z. Klos
 –16:15 Space Research Center, Warsaw, Poland
- 4A4 Numerical Study of the Density Ratio Effect on Propagation of a Cloud of Hot Electrons**
 16:15 H. Khalilpour¹, M. Moslehi-Fard¹, G.R. Froutan²
 –16:30 ¹Tabriz University, Iran
²Sahand University of Technology, Tabriz, Iran
- 4A5 Progress in Plasma Antennas (Invited Keynote)**
 16:30 I. Alexeff¹, T. Anderson², E. Farshi¹
 –17:00 ¹The University of Tennessee, USA
²Haleakala R. & D., Inc., USA
- 4A6 Magnetized Plasma-Wall Transition and its Effect on Wall Sputtering and Erosion**
 17:00 G. Manfredi¹, S. Devaux²
 –17:15 ¹Centre National de la Recherche Scientifique, IPCMS, Strasbourg, France
²LPMIA, Université Henri Poincaré, Vandoeuvre-lès-Nancy, France
- 4A7 Non-Steady Processes in a Plasmatron for Hydrocarbon Combustion and Partial Oxidation**
 17:15 Y.D. Korolev¹, O.B. Frants¹, V.G. Geyman¹, N.V. Landl¹, I.B. Matveev²
 –17:30 ¹Institute of High Current Electronics, Tomsk, Russia
³Applied Plasma Technologies, McLean, VA, USA
- 4A8 Electron-Beam Generated Air Plasma: Ozone and Electron Density Measurements**
 17:30 R.J. Vidmar¹, K.R. Stalder²
 –17:45 ¹University of Nevada, Reno, NV, USA
²Stalder Technologies and Research, Redwood City, CA, USA
- 4A9 Nonlinear Resonance Effects on Electron Heating in Capacitive Discharges**
 17:45 T. Mussenbrock¹, D. Ziegler¹, M. Gebhardt¹, R.P. Brinkmann¹, M.A. Lieberman², A.J. Lichtenberg²,
 –18:00 E. Kawamura²
¹Electrical Engineering and Information Science, Ruhr University Bochum, Germany
²University of California, Berkeley, CA, USA

Oral Session 4B (Tuesday, June 17, 15:30–18:00 • Room 2.05)*Slow Wave Devices and Vacuum Microelectronics*Chair: *John Booske, University of Wisconsin-Madison, WI, USA*

- 4B1 Operation of a Low-Voltage High-Transconductance Field Emitter Array TWT (Invited Keynote)**
 15:30
 –16:00 D.R. Whaley¹, R. Duggal¹, C.M. Armstrong¹, C.L. Bellew², C.E. Holland², C.A. Spindt²
¹*L-3 Communications - Electron Devices Division, San Carlos, CA, USA*
²*SRI International, Menlo Park, CA, USA*
- 4B2 High Power CW Klystrons for Fusion Experiments**
 16:00 A. Beunas¹, F. Kazarian²
 –16:15 ¹*Thales Electron Devices, Vélizy, France*
²*CEA-Cadarache, France*
- 4B3 Experimental Results From an 8-Beam, 5-Cavity Multiple-Beam Klystron with 6% Bandwidth**
 16:15 D.K. Abe¹, J.X. Qiu¹, B. Levush¹, D.E. Pershing², E.L. Wright², K.T. Nguyen², F.N. Wood³, R.E. Myers³,
 –16:30 E. Eisen⁴, I.A. Chernyavskiy⁵, A.N. Vlasov⁵
¹*Naval Research Laboratory, Washington, DC, USA*
²*Beam-Wave Research Inc., Bethesda, MD, USA*
³*ATK, Newington, VA, USA*
⁴*CPI Inc., Palo Alto, CA, USA*
⁵*SAIC, McLean, VA, USA*
- 4B4 High-Average Power Broadband 18-Beam Klystron Circuit and Collector Designs**
 16:30 K.T. Nguyen¹, E.L. Wright¹, D.E. Pershing¹, J. Petillo³, D.K. Abe², B. Levush²
 –16:45 ¹*Beam-Wave Research, Inc., Bethesda, USA*
²*U.S. Naval Research Laboratory, Washington, DC, USA*
³*SAIC, Billerica, MA, USA*
- 4B5 Development of a 1.3 GHz, 10 MW, 65% Efficiency Multi-Beam Klystron for XFEL**
 16:45 T. Habermann, A. Balkcum, R. Begum, H. Bohlen, M. Cattellino, E. Cesca, L. Cox, E. Eisen, S. Forrest,
 –17:00 D. Gajaria, A. Staprans, B. Stockwell, L. Zitelli
CPI, Palo Alto, CA, USA
- 4B6 Development of a 10 MW Hollow Beam Klystron for the ILC**
 17:00 P. Ferguson
 –17:15 *MDS Company, Oakland, CA, USA*
- 4B7 High-Perveance W-Band Sheet-Beam Electron Gun Design**
 17:15 K.T. Nguyen¹, J.A. Pasour², E.L. Wright¹, J. Petillo³, B. Levush²
 –17:30 ¹*Beam-Wave Research, Inc., Bethesda, USA*
²*U.S. Naval Research Laboratory, Washington, DC, USA*
³*SAIC, Billerica, MA, USA*
- 4B8 Numerical and Experimental Studies on Relativistic Magnetron with Axial Extraction**
 17:30 W. Jiang, M. Daimon
 –17:45 *Nagaoka University of Technology Engineering, Japan*
- 4B9 Research of Cathode Plasma During a S-Band Relativistic Magnetron Operation**
 17:45 Y. Hadas¹, A. Sayapin¹, Ya.E. Krasik¹, I. Schintzer²
 –18:00 ¹*Physics Department, Technion, Haifa, Israel*
²*Rafael, POB 2250, Haifa, Israel*

Oral Session 4C (Tuesday, June 17, 15:30–18:00 • Hebel Saal)*Fast Z-Pinches and X-Ray Lasers II*Chair: *Ray Lemke, Sandia National Laboratories, NM, USA***4C1 Two Fluid Modeling of Cylindrical Wire Array Z-Pinches**15:30 M.R. Martin, C.E. Seyler
–15:45 *Cornell University, Ithaca, NY, USA***4C2 Magneto-Hydrodynamic Modeling as an Aid to the Design and Interpretation of Wire Array Z-Pinches**15:45
–16:00 J.P. Chittenden¹, N.P. Niasse¹, C.A. Jennings²
¹*Imperial College, London, U.K.*
²*Sandia National Laboratory, Albuquerque, NM, USA***4C3 Modifying Wire-Array Z-Pinch Ablation Structure and Implosion Dynamics Using Coiled Arrays (Invited Keynote)**16:00
–16:30 G.N. Hall¹, S.N. Bland¹, S.V. Lebedev¹, J.P. Chittenden¹, J.B.A. Palmer¹, F. Suzuki-Vidal¹, S.C. Bott²
¹*Imperial College, London, UK*
²*University of California, San Diego, USA***4C4 Megajoule Plasma-Focus Facility as Generator of Intense Plasma-Ion Streams and Fast Neutron Pulses**16:30
–16:45 M.J. Sadowski^{1,2}, M. Scholz², P. Kubes³
¹*P-V, IPJ, Otwock-Swierk, Poland*
²*IPPLM, Warsaw, Poland*
³*CVUT, Prague, Czech Republic***4C5 Temporal and Spatial Evolution of Carbon Ion Beam Emission in Plasma Focus Discharges**16:45 A. Henriquez, H. Bhuyan, M. Favre, H. Chuaqui, E. Wyndham
–17:00 *Physics Department, Pontificia Universidad Católica de Chile, Santiago, Chile***4C6 Pulsed Power Experiments Aimed at Inertial Confinement Fusion (Invited Keynote)**17:00 A. Kingsep, S. Anan'ev, Yu. Bakshaev, A. Bartov, P. Blinov, A. Chernenko, S. Danko, G. Dolgachev,
–17:30 Yu. Kalinin, E. Kazakov, V. Korolev, D. Maslennikov, V. Mizhiritsky, V. Smirnov
*Russian Research Centre "Kurchatov Institute", Moscow, Russia***4C7 Enhanced Magnetic Energy Released in Solid-State and Plasma Loads on a Nanosecond Pulse Power Generator**17:30
–17:45 A.S. Chuvatin¹, V.L. Kantsyrev², A.L. Astanovitskiy², R. Presura², A.S. Safronova², A.A. Esaulov²,
W. Cline², K.M. Williamson², I. Shrestha², M.F. Yilmaz², G.C. Osborne², T. Jarrett², B. LeGalloudec²,
N. Nalajala², L.I. Rudakov³, M.E. Cuneo⁴, T.D. Pointon⁴, K. Mikkelsen⁴
¹*LPTP, Ecole Polytechnique, Palaiseau, France*
²*University of Nevada, Reno, NV, USA*
³*Icarus Research Inc., Bethesda, MD, USA*
⁴*Sandia National Laboratories, Albuquerque, NM, USA***4C8 A Low Inductance Linear Transformer Driver for Exploding Wire Experiments**17:45 S.C. Bott, D.M. Haas, U. Ueda, Y. Eshaq, R. Madden, G. Collins, F.N. Beg
–18:00 *University of California, San Diego, CA, USA*

Oral Session 4D (Tuesday, June 17, 15:30–18:00 • Mombert Saal)*High-Pressure and Thermal Plasma Processing II*Chair: *Pierre Fauchais, University of Limoges, France***4D1 Optimization of Plasma Arc Cutting of Mild Steel Thin Plates**15:30 V. Colombo¹, E. Ghedini¹, A. Concetti², S. Dallavalle³, R. Fazzioli³, M. Vancini³–15:45 ¹Department of Mechanical Engineering (D.I.E.M.) and Research Centre for Applied Mathematics (C.I.R.A.M.), University of Bologna, Italy²Department of Mechanical Engineering (D.I.E.M.), University of Bologna, Italy³Cebora S.p.A., Cadriano di Granarolo, Italy**4D2 Three-Dimensional Time-Dependent Non-Equilibrium Modeling of Arc and Jet Dynamics in DC Plasma Torches**

15:45

–16:00 J.P. Trelles, J.V.R. Heberlein, E. Pfender

Department of Mechanical Engineering, University of Minnesota, Minneapolis, USA

4D3 Modeling on Rapid Ablation/Sublimation From the Surface of Solid Particles Injected Into Thermal Plasmas

16:00

–16:15 Y. Tanaka¹, J. Mostaghimi²¹Division of Electrical Engineering and Computer Science, Kanazawa University, Japan²Centre for Advanced Coating Technologies, University of Toronto, Canada**4D4 Thermodynamic and Transport Properties of H35 and F5 Plasma Cutting Mixtures in Non-Equilibrium**

16:15

–16:30 V. Colombo¹, E. Ghedini¹, P. Sanibondi²¹Department of Mechanical Engineering (D.I.E.M.) and Research Centre for Applied Mathematics (C.I.R.A.M.), University of Bologna, Italy²Department of Mechanical Engineering (D.I.E.M.), University of Bologna, Italy**4D5 LARGE-A Torch to Determine and Model Plasma Physics and Behavior for CVD Process Applications**

16:30

–16:45 S. Zimmermann, E. Theophile, K. Landes, J. Schein

Universität der Bundeswehr, Neubiberg, Germany

4D6 Initial Processes of a Pulsed Micro-Arc Discharge Between Wire-To-Plane Electrodes in Liquid

16:45

–17:00 M. Kanemaru, R. Saiki, T. Hashimoto, S. Ibuka, S. Ishii

Tokyo Institute of Technology, Japan

4D7 Dielectric Barrier Discharge Species Gain for Microelectronic Substrate Treatment (Invited Keynote)

17:00

–17:30 K. Arshak¹, I. Guiney¹, O. Korostynska¹, E. Forde²¹Department of Electronic and Computer Engineering, University of Limerick, Ireland²Allied Plasma Ltd., Ireland**4D8 A (r)evolutionary Concept for Low Voltage Plasma Generation at Atmospheric Pressure**

17:30

–17:45 M. Teschke¹, J. Engemann^{1,2}¹University of Wuppertal, FMT - Forschungszentrum für Mikrostrukturtechnik, Wuppertal, Germany²JE Plasmaconsult GmbH, Wuppertal, Germany**4D9 Plasma Based Improvements in Fuel Cells**

17:45

–18:00 R.W. Boswell¹, C. Charles¹, A. Caillard¹, C. Corr¹, D. Ramdutt¹, P. Brault²¹Space Plasma, Power and Propulsion Laboratory, The Australian National University, ACT 0200, Australia²GREMI UMR CNRS, Université d'Orléans, France

Oral Session 4E (Tuesday, June 17, 15:30–18:00 • Room 2.08)*Particle Acceleration with Lasers and Beams*Chair: *Andreas Ulrich, Technical University of Munich, Germany*

- 4E1 Study of Hot Electron Propagation in Cone-Wire Targets and Foams (Invited Keynote)**
 15:30 P. Wilson¹, L. Romagnani¹, M. Borghesi¹, K. Quinn¹, B. Ramakrishn¹, J. Fuchs², L. Lancia², P. Antici²,
 –16:00 C.A. Piphalski³, O. Willi³, M. Tampo⁴, H. Nakamura⁴, R. Kodama⁴
¹Queen's University of Belfast, UK
²LULI, CNRS-Ecole Polytechnique- Univ, Paris, France
³Institut für Laser- und Plasmaphysik, Heinrich-Heine-Universität, Düsseldorf, Germany
⁴Institute of Laser Engineering, Osaka University, Japan
- 4E2 Three-Dimensional Simulation of keV-Photon Laser Operation Using GeV Ultra-Short Laser-Generated Electron Bunches (Invited Keynote)**
 16:00 M.J. Schmitt, W.S. Daughton, L. Yin, B.J. Albright, D.S. Main, T.J.T. Kwan
 –16:30 Los Alamos National Laboratory, NM, USA
- 4E3 Laser-Produced Collimated Proton Beam by a Tailored Thin Foil Target (Invited Keynote)**
 16:30 S. Kawata¹, Y. Nodera¹, N. Onuma¹, M. Nakamura¹, R. Sonobe¹, T. Kikuchi¹, Q. Kong², P.X. Wang²,
 –17:00 J. Limpouch³, O. Klimov³, A. Andreev⁴
¹Graduate School of Engineering, Utsunomiya University, Japan
²Inst. Modern Phys., Fudan Univ., Shanghai, China
³Czech Tech. University, Prague, Czech Republic
⁴S.I. Vavilov State Optical Institute, St. Petersburg, Russia
- 4E4 Energy Doubling of 42GeV Electrons in a Particle-Driven, Plasma-Based Accelerator (Invited Keynote)**
 17:00 P. Muggli¹, T. Katsouleas¹, E. Oz¹, C.D. Barnes², I. Blumfeld², F.J. Decker², M.J. Hogan², R. Ischebeck²,
 –17:30 R.H. Iverson², N. Kirby², P. Krejcik², C. O'Connell², R.H. Siemann², D. Walz², C.E. Clayton³, C. Huang³,
 D.K. Johnson³, C. Joshi³, W. Lu³, K.A. Marsh³, W.B. Mori³, M. Zhou³
¹University of Southern California, Los Angeles, CA, USA
²Stanford Linear Accelerator Center, Menlo Park, CA, USA
³University of California, Los Angeles, CA, USA
- 4E5 The Effect of Nonlinear Plasma on Electron Output Beam in Bubble Regime**
 17:30 P. Zobdeh¹, R. Sadighi-Bonabi², H. Afarideh¹
 –17:45 ¹Department of Physics, Islamic Azad University of Qom, Iran
²Department of Physics, Sharif University of Technology, Tehran, Iran
³Department of Physics, Amirkabir University of Technology, Tehran, Iran
- 4E6 Electron Trapping and Field Propagation in Laser-Plasma Interaction with Density Transition**
 17:45 R. Rezaei-Nasirabad¹, E. Yazdani¹, P. Zobdeh², R. Sadighi-Bonabi³
 –18:00 ¹School of Laser and Optics, Bonab, Iran
²Department of Physics, Amirkabir University of Technology, Tehran, Iran
³Department of Physics, Sharif University of Technology, Tehran, Iran

Oral Sessions on Wednesday Morning, June 18

Oral Session 5A (Wednesday, June 18, 09:30–12:00 • Club Room)

*Dusty Plasmas I*Chair: *André Melzer, University of Greifswald, Germany***5A1 Ion Drag Force in Collisional Plasmas (Invited Keynote)**

09:30 S.A. Khrapak

–10:00 *Max-Planck-Institut für Extraterrestrische Physik, Garching, Germany***5A2 Heartbeat Instability Under Microgravity Conditions Observed in the PK-3 Plus Laboratory (Invited Keynote)**

10:00

–10:30 R.J. Heidemann¹, H.M. Thomas¹, S.K. Zhdanov¹, A.V. Ivlev¹, G. Morfill¹, V. Fortov², V.I. Molotkov², O. Petrov², A.I. Lipaev²¹*Max-Planck-Institut für Extraterrestrische Physik, Garching, Germany*²*RAS - Institute for High Energy Densities, Moscow, Russia***5A3 Kinetic Processes in Dusty Plasmas Produced by Shock Wave**10:30 A.M. Starik, A.M. Savel'ev, N.S. Titova–10:45 *Central Institute of Aviation Motors, Moscow, Russia***5A4 Self-Organization in Complex Plasmas - Lane Formation and Beyond (Invited Keynote)**

10:45

M. Kretschmer¹, M. Thoma¹, H. Höfner¹, G. Morfill¹, A. Usachev², A. Zobnin², O. Petrov², V. Fortov²–11:15 ¹*Max-Planck-Institut für Extraterrestrische Physik, Garching, Germany*²*Institute for High Energy Densities, RAS, Moscow, Russia***5A5 KP Equation in Multispecies Dusty Plasma Consisting of Nonthermal Ions**

11:15

N.S. Saini, C. Bedi, T.S. Gill–11:30 *Physics Department, Guru Nanak Dev University, Amritsar, India*

Oral Session 5B (Wednesday, June 18, 09:30–12:00 • Room 2.05)

Radiation Physics, High Energy Density Matter and Laser Produced Plasmas

Chair: Alexander Pukhov, University of Düsseldorf, Germany

- 5B1 Proposed High Energy Density Physics Research Using Intense Particle Beams at FAIR and CERN: the HEDgeHOB Collaboration (Invited Keynote)**
 09:30 N.A. Tahir¹, A. Shutov², V. Kim², I.V. Lomonosov², V.E. Fortov², A.R. Piriz³, R. Schmidt⁴, M. Brugger⁴,
 –10:00 D.H.H. Hoffmann⁵, C. Deutsch⁶
¹GSI Darmstadt, Germany
²IPCP Chernogolovka, Russia
³UCLM, Ciudad Real, Spain
⁴CERN, Geneva, Switzerland
⁵TU Darmstadt, Germany
⁶LPGP, University Paris-Sud, Orsay, France
- 5B2 Underwater Electrical Wire Explosion (Invited Keynote)**
 10:00 S. Efimov, D. Veksler, A. Fedotov, D. Sheftman, V.T. Gurovitch, S. Gleizer, G. Bazalitski, Ya.E. Krasik
 –10:30 Physics Department, Technion, Haifa, Israel
- 5B3 2D Modeling of Field Ionization Role in Ion Acceleration From Thin Foils Irradiated by Laser Pulse of 10^{21} W/cm² Intensity**
 10:30 I.V. Glazyrin¹, A.V. Karpeev¹, O.G. Kotova¹, V.A. Lykov¹, S.I. Samarin¹, A.N. Slesareva¹, E.Y. Smirnov¹,
 –10:45 V.Y. Bychenkov²
¹RFNC-VNIITF, Snezhinsk, Russia
²P.N. Lebedev Physics Institute RAS, Moscow, Russia
- 5B4 Investigation of Plasma Turbulence in Finite Beta Z-Pinch Plasma and Laboratory Astrophysics Experiments**
 10:45 J.M. Kindel¹, V.I. Sotnikov¹, V.I. Ivanov¹, R. Presura¹, J.N. Leboeuf², O.G. Onishchenko³, B.V. Oliver⁴,
 –11:00 B.M. Jones⁴, T.A. Mehlhorn⁴, C. Deeney⁵
¹Physics, University of Nevada, Reno, NV, USA
²JNL Scientific, Casa Grande, AZ, USA
³Institute of Physics of Earth, Moscow, Russia
⁴Sandia National Laboratories, Albuquerque, NM, USA
⁵Department of Energy, Washington, DC, USA
- 5B5 Relaxation Layer and Radiation Processes in Electro-Magnetically Driven Strong Shock Wave**
 11:00 K. Kondo, M. Nakajima, T. Kawamura, K. Horioka
 –11:15 Department of Energy Sciences, Tokyo Institute of Technology, Japan
- 5B6 Influence of Beam Temperature and Plasma Collisions on the Weibel Instability**
 11:15 A. Karmakar, N. Kumar, A. Pukhov
 –11:30 Instiut für Theoretische Physik I, Heinrich-Heine-Universität, Düsseldorf, Germany
- 5B7 Growth of High Power Laser Ripple in Plasma and its Effects on Upper Hybrid Wave Excitation: Relativistic Effects**
 11:30 T.S. Gill, N.S. Saini, R. Mahajan
 –11:45 Physics Department, Guru Nanak Dev University, Amritsar, India
- 5B8 The Interaction of Low-Intensity Femtosecond Laser Pulses with a Copper Foil**
 11:45 N.G. Karlykhanov¹, V.A. Lykov¹, A.T. Sapozhnikov¹, S. Kirkwood², Y.Y. Tsui², R. Fedosejevs²
 –12:00 ¹RFNC-VNIITF, Snezhinsk, Russia
²University of Alberta, Canada

Oral Session 5C (Wednesday, June 18, 09:30–12:00 • Hebel Saal)*Fast Z-Pinches and X-Ray Lasers III*Chair: *Jeremy Chittenden, Imperial College, London, UK***5C1 3D MHD Simulations of Single and Nested Wire Arrays Constrained by Experimentally Measured Mass Distributions**

09:30

–09:45 C.A. Jennings¹, D.J. Ampleford¹, M.E. Cuneo¹, J.P. Chittenden²¹*Sandia National Laboratories, Albuquerque, NM, USA*²*Imperial College London, UK***5C2 Radial Wire Array Z-Pinches as a Driver for HEDP Experiments**

09:45

S.N. Bland¹, S.V. Lebedev¹, G.N. Hall¹, F. Suzuki-Vidal¹, A. Harvey-Thompson¹, A.M. Marocchino¹,–10:00 G. Swaddling¹, J.P. Chittenden¹, D. Grant¹, D.J. Ampleford², C.A. Jennings²¹*Imperial College London, United Kingdom*²*Sandia National Laboratories, Albuquerque, NM, USA***5C3 Experimental Study of the Ion Thermalization at a Z-Pinch at Stagnation (Invited Keynote)**

10:00

D. Osin¹, E. Kroupp¹, A. Starobinets¹, V. Fisher¹, V. Bernshtam¹, Y. Maron¹, I. Uschmann², E. Foerster²,–10:30 A. Fisher³, B.M. Jones⁴, P.D. LePell⁴, M.E. Cuneo⁴, C. Deeney⁴¹*Faculty of Physics, Weizmann Institute of Science, Israel*²*Friedrich-Schiller University, Jena, Germany*³*Faculty of Physics, Technion, Haifa, Israel*⁴*Sandia National Laboratories, Albuquerque, NM, USA***5C4 Radial Wire Array Z-Pinches as a Novel, Compact X-Ray Source**

10:30

D.J. Ampleford¹, C.A. Jennings¹, S.N. Bland², S.V. Lebedev², G.N. Hall², F. Suzuki-Vidal²–10:45 ¹*Sandia National Laboratories, Albuquerque, NM, USA*²*Imperial College London, UK***5C5 The “Baikal” Project and Investigations of Radiating Z-Pinches at the “Angara-5-1” Facility**

10:45

E.V. Grabovski, V.P. Smirnov, V.V. Alexandrov, M.V. Fedulov, I.N. Frolov, A.N. Gribov, A.N. Gritsuk,

–11:00 Y.N. Laukhin, S.F. Medovshikov, K.N. Mitrofanov, G.M. Oleinik, A.A. Samokhin, G.S. Volkov, V.I. Zaitsev,

A.P. Lototsky, A.M. Zhitlukhin, V.A. Afanasyev, V.P. Bakhtin, N.M. Efremof, G.N. Khomutinnikov, M.K. Krylov,

A.A. Nikolashin, S. Seryakov, P.V. Sasorov, V.A. Gasilov, S.V. D'yachenko, O.G. Olkhovskaya,

E.L. Kartasheva, A.S. Boldarev

*SRF RF Trinit, Troitsk, Russia***5C6 Going From Nested to Single Wire Array for 800 ns Implosion Time Z-Pinches, Using Microsecond Prepulse Technique on Sphinx Machine (Invited Keynote)**

11:00

–11:30 F. Zucchini, H. Calamy, F. Lassalle, A. Luyen, F. Hamann, P. Maury, A. Georges, J.P. Bedoch, A. Morell

*Centre d'Etudes de Gramat, France***5C7 2D r-z MHD Simulations for Sphinx Experiments. Numerical Study of Single Wire Array Z-Pinches with Multi-Microsecond Current Prepulse**

11:30

–11:45 J. Grunenwald, H. Calamy, F. Lassalle, F. Zucchini, A. Luyen, P. Maury, A. Georges, A. Morell, J.P. Bedoch

*Centre d'Etudes De Gramat, France***5C8 Soldered Contact Effect on Wire Array Z-pinches**

11:45

D.A. Chalenski, B.R. Kusse, J.B. Greenly

–12:00 *Laboratory of Plasma Studies, Cornell University, Ithaca, USA*

Oral Session 5D (Wednesday, June 18, 09:30–12:00 • Mombert Saal)

Medical, Biological and Environmental Applications II

Chair: Mounir Laroussi, Old Dominion University, VA, USA

- 5D1 New Non-Equilibrium Atmospheric Plasma Gun for Applications in Medicine (Invited Keynote)**
 09:30
 –10:00 J.-M. Pouvesle, A. Khacef, C. Cachoncinlle, S. Dozias, E. Robert, R. Viladrosa
GREMI, Université d'Orléans, France
- 5D2 Plasmas Created by Electrical Discharges in Liquids and their Applications to Electrosurgery (Invited Keynote)**
 10:00
 –10:30 K.R. Stalder, J. Woloszko
ArthroCare Corp., Sunnyvale, CA, USA
- 5D3 Sterilization and Complete Removal of Bacteria Using Atmospheric Pressure Plasmas**
 10:30 M. Cooper¹, G. Fridman², N. Vaze², D. Staack¹, S. Anandan³, Y. Cho¹, A. Gutsol¹, A. Fridman¹, A. Tsapin⁴
 –10:45 ¹Department of Mechanical Engineering and Mechanics, Drexel University, Philadelphia, PA, USA
²School of Biomedical Engineering, Science, and Health Systems, Drexel University, Philadelphia, PA, USA
³Department of Bioscience & Biotechnology, Drexel University, Philadelphia, PA, USA
⁴NASA Jet Propulsion Laboratory, Pasadena, CA, USA
- 5D4 DC Operated Atmospheric Pressure Air Plasma Jet for Biomedical Applications**
 10:45 J.F. Kolb, R.O. Price, M. Stacey, R.J. Swanson, A.M. Bowman, R.L. Chiavarini, K.H. Schoenbach
 –11:00 *Frank Reidy Research Center for Bioelectrics, Old Dominion University, Norfolk, VA, USA*
- 5D5 Killing the Teliospores of Tilletia Controversa Kuhn (TCK) with Atmospheric Microwave Plasma**
 11:00
 –11:15 J. Feng¹, G. Zhang¹, L. Liu¹, S. Wang¹, Q. Zhang¹, Z. Sun², Z. Ma², H. Wang²
¹Department of Electrical Engineering and Applied Electronic Technology, Tsinghua University, Beijing, China
³Department of Plant Pathology, China Agricultural University, Beijing, China
- 5D6 Penetration of Direct Non-Thermal Plasma Treatment Into Living Cells**
 11:15 S. Kalghatgi¹, C. Kelly², G. Fridman³, A. Fridman⁴, J. Clifford², G. Friedman¹
 –11:30 ¹Department of Electrical and Computer Engineering, Drexel University College of Engineering, Philadelphia, PA, USA
²Department of Biochemistry, Drexel University College of Medicine, Philadelphia, PA, USA
³School of Biomedical Engineering, Health and Sciences, Drexel University, Philadelphia, PA, USA
⁴Department of Mechanical Engineering and Mechanics, Drexel University College of Engineering, Philadelphia, PA, USA
- 5D7 Effects of Substrate Conductivity on Dielectric Barrier Discharge Sterilization Efficacy**
 11:30 M. Cooper¹, G. Fridman², N. Vaze², A. Gutsol¹, Y. Cho¹, S. Anandan³, A. Tsapin⁴, A. Fridman¹
 –11:45 ¹Department of Mechanical Engineering and Mechanics, Drexel University, Philadelphia, PA, USA
²School of Biomedical Engineering, Science, and Health Systems, Drexel University, Philadelphia, PA, USA
³Department of Bioscience & Biotechnology, Drexel University, Philadelphia, PA, USA
⁴NASA Jet Propulsion Laboratory, Pasadena, CA, USA
- 5D8 Penetration of Direct Non-Thermal Plasma Treatment Into Living Cells**
 11:45 S. Kalghatgi, C. Kelly, G. Fridman, J. Clifford, A. Fridman, G. Friedman
 –12:00 *Drexel University, Philadelphia, PA, USA*

Oral Session 5E (Wednesday, June 18, 09:30–12:00 • Room 2.08)*Microwave, FIR and Particle Diagnostics*Chair: *Garrard Conway, MPI for Plasmaphysics, Garching, Germany***5E1 Simulation of Doppler Reflectometry in Turbulent Plasmas (Invited Keynote)**09:30 *C. Lechte¹, U. Stroth¹, G. Conway²*–10:00 ¹*Institut für Plasmaforschung, Universität Stuttgart, Germany*²*Max-Planck-Institut für Plasmaphysik, Garching, Germany***5E2 Particle Shape Imaging-A Method for Analyzing Particles-In-Flight (Invited Keynote)**10:00 *S. Zimmermann, K. Landes, J. Schein*–10:30 *Universität der Bundeswehr, Neubiberg, Germany***5E3 Studies of Short-Wave Turbulence in ECR Heated Plasma of the L-2M Stellarator**10:30 *N.N. Skvortsova, G.M. Batanov, L.V. Koliik, A.E. Petrov, A.A. Phenichnikov, K.A. Sarksyan, N.K. Kharchev*–10:45 *General Physics Institute, RAS, Moscow, Russia***5E4 Millimeter-Wave Sources for Plasma Diagnostics**10:45 *D.W. Porterfield, J.L. Hesler, D.S. Kurtz, T.W. Crowe*–11:00 *Virginia Diodes, Inc., Charlottesville, VA, USA***5E5 Heterodyne Detector for Measuring the Characteristics of Elliptically Polarized Microwaves**11:00 *F. Leipold, S. Nielsen, F. Meo*–11:15 *Risø National Laboratory, Technical University of Denmark, Roskilde, Denmark***5E6 Comparison of Langmuir Probe and Hairpin Methods to Characterise Microwave Cool Plasma**11:15 *M. Amidi*–11:30 *Engineering and Industrial Science, Swinburne University of Technology, Hawthorn, Australia***5E7 Plasma Density Measurements in Aggressive Etching Gas Environment**11:30 *I.P. Ganachev^{1,2}, K. Nakamura², H. Sugai²*–11:45 ¹*Shibaura Mechatronics Corporation, Yokohama, Japan*²*Chubu University, Aichi, Japan***5E8 Four-Channel Spectral System for Submm-Wave Radiometry of Hot Plasma**11:45 *S.A. Kuznetsov¹, A.V. Arzhannikov¹, A.V. Gelfand², N.I. Fedorinina²*–12:00 ¹*Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia*²*Branch of the Institute of Semiconductor Physics SB RAS "TDIAP", Novosibirsk, Russia*

Poster Session on Wednesday, June 18

Poster Session 3P (Wednesday, June 18, 13:00–14:00 • Poster Area – Foyer)

Dusty Plasmas

Chair: André Melzer, University of Greifswald, Germany

- 3P1 Dust Acoustic Solitary and Shock Waves in Coupled Dusty Plasmas with Variable Dust Charge and Isonothermal Ions**
 H.R. Pakzad
 Department of Physics, Islamic Azad University of Bojnourd, Iran
- 3P2 Discrete Breathers and Vortices in Hexagonal Dust Crystals**
 P. Kevrekidis¹, V. Koukoulouyannis², I. Kourakis³, D. Frantzeskakis⁴
¹ Department of Mathematics and Statistics, University of Massachusetts, Amherst, MA, USA
² School of Physics, University of Thessaloniki, Greece
³ Centre for Plasma Physics, Queen's University Belfast, UK
⁴ Department of Physics, University of Athens, Greece
- 3P3 A New Property of Electromagnetic Wave Interacting with Dust-Laden Plasma**
 Z. Ehsan^{1,2}, N.L. Tsintsadze^{1,3}, H.A. Shah², G. Murtaza¹
¹ Salam Chair in Physics, G.C. University Lahore, Pakistan
² Department of Physics, G.C. University Lahore, Pakistan
³ Department of Plasma Physics, Tbilisi State University, Georgia
- 3P4 Crystallization in a Mesoscopic System of Charged Dust Particles: Molecular Dynamics Simulations**
 B. Klumov¹, S.V. Vladimirov^{1,2}, G. Morfill¹
¹ Max Planck Institute for Extraterrestrial Physics, Garching, Germany
² School of Physics, The University of Sydney, Australia
- 3P5 Potential Around a Small Charge in the RF Plasma-Wall Transition Layer**
 R. Kompaneets¹, A.V. Ivlev¹, U. Konopka¹, V. Tsytovich², S.V. Vladimirov^{1,3}, G. Morfill¹
¹ Max Planck Institute of Extraterrestrial Physics, Garching, Germany
² General Physics Institute, Moscow, Russia
³ School of Physics, The University of Sydney, Australia
- 3P6 Charge Fluctuations and Their Influence on Dust Cluster Oscillation Modes**
 D.J. Kedziora, S.V. Vladimirov, A.A. Samarian
 School of Physics, The University of Sydney, Australia
- 3P7 Dust Particle Alignments and Transitions in a Plasma Sheath**
 J.D.E. Stokes, S.V. Vladimirov, A.A. Samarian
 School of Physics, The University of Sydney, Australia
- 3P8 Charging of Insulating Dust Grains in Flowing Plasmas with a Directed Photon Flux**
 W.J. Miloch^{1,2}, S.V. Vladimirov², H.L. Pécseli³, J. Trulsen¹
¹ Institute of Theoretical Astrophysics, University of Oslo, Norway
² School of Physics, The University of Sydney, Australia
³ Department of Physics, University of Oslo, Norway
- 3P9 Large Amplitude Ion Acoustic Solitary Waves in a Plasma Consisting of Warm Ions, Two-Temperature Electrons and a Cold Electron Beam**
 A. Esfandyari-Kalejahi¹, I. Kourakis², M. Ganbari³
¹ Azerbaijan University of Tarbiat Moallem, Tabriz, Iran
² Center for Plasma Physics, Queen's University Belfast, Northern Ireland, UK
³ Faculty of Science, Azerbaijan University of Tarbiat Moallem, Tabriz, Iran
- 3P10 Two Dimensional Dust Clusters in Elliptical Confinement**
 L. Rouaiguia, M. Issaad, M. Djebli, M. Drir
 Theoretical Physics Laboratory, Faculty of Physics -U.S.T.H.B.-, Algiers, Algeria
- 3P11 Dromions Solutions for Acoustic Waves in Saturn's Ring**
 K. Annou, S. Bahamida, R. Annou
 Theoretical Physics Laboratory, USTHB, Algiers, Algeria

Poster Session 3P (Wednesday, June 18, 13:00–14:00 • Poster Area – Foyer)*Slow Wave Devices and Vacuum Microelectronics*

Chair: David Whaley, L-3 Communications, San Carlos, CA, USA

- 3P12 High Frequency, Wide-Bandwidth Millimeter-Wave Power Module**
H. Song¹, F. Francisco², D. Steidle²
¹Department of Electrical and Computer Engineering, University of Colorado, CO, USA
²Triton Electron Technology Division, Easton, PA, USA
- 3P13 Investigation of Microfabricated Millimeter-Wave Traveling Wave Tube Amplifier Structures**
J.S. Lee¹, H. Song²
¹Consultant, Ann Arbor, MI, USA ²University of Colorado, Colorado Springs, CO, USA
- 3P14 Numerical Simulations of Electron Beam Transport Through a Permanent-Magnet Quadrupole Lattice for mm-Wave TWT Applications**
J. Petillo¹, R.A. Kishek¹, D. Chernin¹, D.K. Abe², B. Levush²
¹Science Applications International Corp., McLean, VA, USA
²Naval Research Laboratory, Washington, DC, USA
- 3P15 Effects of Random Circuit Fabrication Errors on Small Signal Gain and Phase in Traveling Wave Tubes**
P. Pengvanich¹, Y.Y. Lau¹, R.M. Gilgenbach¹, D. Chernin², J.W. Luginsland³
¹University of Michigan, Ann Arbor, MI, USA
²Science Applications International Corporation, McLean, VA, USA
³NumerEx, Ithaca, NY, USA
- 3P16 Particle Simulation of a Sinusoidal Corrugation Compact L-Band Coaxial Backward Wave Oscillator**
X. Ge, H. Zhong, B. Qian
College of Optoelectric Science and Engineering, National University of Defense Technology, Hunan, China
- 3P17 The R&D Status of 700 MHz 1 MW CW Klystron**
J.S. Hong^{1,2}, B.H. Chung^{1,2}, J.H. Jeon^{1,2}, D.U. Kim¹, S.J. Noh², S.K. Ko³
¹KARPA, Chrewon-gun, Korea
²Department of Applied Physics, Dankook University, Yongingsi, Korea
³Department of Physics, Ulsan University, Namgu, Korea
- 3P18 A 600 kW 425 MHz Hollow Beam Klystron for Commercial Proton Linacs**
P. Ferguson¹, D. Whittick¹, S. Humphries², M. Korringa³, K. Lillis³, A. Schragger³
¹MDS Company, Oakland, CA, USA
²Field Precision, Inc., Albuquerque, NM, USA
³ETM Electromatic, Inc., Newark, CA, USA
- 3P19 Magnetron Phase Locking: Effects of Frequency Chirp and Locking of Multiple Magnetrons***
P. Pengvanich¹, Y.Y. Lau¹, R.M. Gilgenbach¹, E.J. Cruz¹, J.W. Luginsland², E. Schamiloglu³
¹University of Michigan, Ann Arbor, MI, USA
²NumerEx, Ithaca, NY, USA
³University of New Mexico, Albuquerque, NM, USA
- 3P20 Investigation of Nonlinear Dynamics and Chaos in Magnetrons**
D. Li, X. Chen
Queen Mary University of London, UK
- 3P21 Solenoidal Transport of Low-Voltage (≤ 20 kV) Sheet Beams**
J.A. Pasour¹, K.T. Nguyen², T.M. Antonsen³, P. Larsen¹, B. Levush¹
¹US Naval Research Laboratory, Washington, DC, USA
²Beam Wave Research, Inc., Bethesda, MD, USA
³University of Maryland, College Park, MD, USA
- 3P22 Simulations and Preliminary Experimental Results of a Coherent Smith-Purcell Experiment in the Microwave Domain**
J. Gardelle¹, P. Modin¹, L. Courtois¹, J.T. Donohue²
¹CEA/Centre d'Etudes Scientifiques et Techniques d'Aquitaine, Le Barp, France
²CENBG, Gradignan, France

- 3P23 Transient Currents in a Field Emitter**
C. Di Stefano¹, Y.Y. Lau¹, R.M. Gilgenbach¹, J.W. Luginsland²
¹University of Michigan, Ann Arbor, MI, USA
²NumerEx, Ithaca, NY, USA
- 3P24 Microvacuum UHF Diodes and Monothrones with Field-Emission Catodes**
A.A. Kurayev, A.K. Sinitsyn
Belarusian State University, Minsk, Belarus
- 3P25 A High Power Millimeter-Wave Source Operated at Low Magnetic Field**
J. Zhu, T. Shu
College of Optoelectric Science and Engineering, National University of Defense Technology, Changsha, China
- 3P26 Impact of VSWR and RF Losses on Electron Tube Performance**
C. Robert
Thales Electron Devices, Thonon, France
- 3P27 Dispersion Characteristics of Hybrid Waves in Beam-Loaded Corrugated Waveguides with Losses**
I.G. Tigelis¹, G.P. Latsas¹, J.L. Vomvoridis²
¹National and Kapodistrian University of Athens, Faculty of Physics, Department of Electronics, Computers, Telecommunications and Control, Athens, Greece
²National Technical University of Athens, School of Electrical and Computer Engineering, Division of Electromagnetics, Electrooptics and Electronic Materials, Greece
- 3P28 Electromagnetic Waves in a Longitudinally Magnetized Planar Waveguide Loaded with Semiconductor Plates**
A. Rusanov
National Synchrotron Radiation Research Center, Hsinchu, Taiwan, R.O.C.

Poster Session 3P (Wednesday, June 18, 13:00–14:00 • Poster Area – Foyer)

Microwave Systems and Microwave Plasma Interaction

Chair: Gregory Denisov, Institute of Applied Physics, RAS, Russia

- 3P29 Powerful Microwave UV-Lamp. Physics and Application**
E.M. Barkhudarov¹, I.A. Kossyi¹, M.A. Misakyan¹, E. Kulumbaev²
¹A.M. Prokhorov General Physics Institute of RAS, Moscow, Russia
²Kyrgyz-Russian Slavic University, Bishkek, Kyrgyz Republic
- 3P30 Microwave Discharge Excitation in Single Conductor Transmission Line**
O.M. Kuleshov, M.O. Khorunzhiy, A.V. Uzlenkov, B.P. Yefimov
Institute of Radiophysics and Electronics of NAS of Ukraine, Kharkov, Ukraine
- 3P31 Microwave Spark Plug**
I.A. Kossyi¹, S.I. Gritsinin¹, A.M. Davydov¹, V.A. Vinogradov², Yu.M. Shikhman²
¹A.M. Prokhorov General Physics Institute of RAS, Moscow, Russia
²Central Institute of Aviation Motors, Moscow, Russia
- 3P32 Free Standing Plasma in a Bifocal Microwave Concentrator**
U. Schweitzer¹, A. Schulz¹, M. Walker¹, U. Stroth¹, L. Alberts², M. Kaiser², C. Hunyar², M. Graf², E. Räu chle²
¹Institut für Plasmaforschung, Universität Stuttgart, Germany
²Fraunhofer Institut für Chemische Technologie, Pfinztal, Germany
- 3P33 Mode Coupling in a Partially Filled Dielectric Loaded Plasma Waveguide**
F.M. Aghamir, P. Goodarzi
Dept. of Physics, University of Tehran, Iran
- 3P34 Dynamically Scanned Plasma Reflector Array for Beam Forming**
M. Chung, W.S. Chen, Y.H. Yu
Dept. of Electronics Engineering, Southern Taiwan University, Tainan, Taiwan
- 3P35 The Period Variation of a Relaxation Oscillator Due to a Low Intensity Microwave Field**
O.S. Stoican
INFLPR, Magurele, Romania

3P36 Measurement of Dielectric Properties of Liquid Polymers with their Temperature Dependence at 2.45 GHzM.J. Akhtar¹, L. Feher¹, M. Thumm^{1,2}¹Research Center Karlsruhe (FZK), IHM, Germany²University of Karlsruhe, IHE, Germany**3P37 High Power Microwave System for Fluid Injection Applications**S. Stanculovic¹, L. Feher¹, M. Thumm^{1,2}¹Research Center Karlsruhe (FZK), IHM, Germany²University of Karlsruhe, IHE, Germany**3P38 Investigation of Making Iron by Millimeter-Wave Heating**S. Takayama¹, G. Link², A. Matsubara³, D. Louzguine⁴, S. Sano⁵, M. Sato¹, M. Thumm²¹National Institute for Fusion Science, Toki, Japan²Research Center Karlsruhe (FZK), IHM, Germany³Chubu University, Aichi, Japan⁴Institute for Material Research, Tohoku University, Sendai, Japan⁵Advanced Industrial Science and Technology, Nagoya, Japan**3P39 IR-Spectroscopy for In-Situ Investigation of Microwave Processes**G. Link¹, S. Heissler², W. Faubel², P. Weidler², M. Thumm^{1,3}¹Research Center Karlsruhe (FZK), IHM, Germany²Research Center Karlsruhe (FZK), ITC-WGT, Germany³University of Karlsruhe, IHE, Germany**Poster Session 3P (Wednesday, June 18, 13:00–14:00 • Poster Area – Foyer)***Particle Acceleration with Lasers and Beams**Chair: Markus Roth, GSI Darmstadt, Germany***3P40 High Harmonics Generation in Underdense Plasma From Relativistic Thomson Scattering**F. Abbasi¹, A.R. Bahrapour²¹Vali-Asr University, Rafsanjan, Iran²Sharif University, Tehran, Iran**3P41 Effect of Laser Beam Filamentation on Plasma Wave Localization and Electron Heating**

P. Sharma, R.P. Sharma

*Centre for Energy Studies, Indian Institute of Technology Delhi, India***3P42 Plasma Diagnostics of a Capillary Discharge-Produced Plasma to Guide an Ultrashort, Intense Laser Pulse and its Electron Acceleration**

H. Terauchi, M. Hikida, J. Bai, T. Higashiguchi, N. Yugami

*Utsunomiya University, Tochigi, Japan***3P43 Multi-Bunch Plasma Wakefield Acceleration Experiments**P. Muggli¹, E. Kallos¹, T. Katsouleas¹, V. Yakimenko², M. Babzien², K. Kusche², I. Pogorelsky², W. Kimura³¹University of Southern California, Los Angeles, CA, USA²Brookhaven National Laboratory, Upton, MA, USA³STI Optronics Inc., Bellevue, WA, USA**3P44 Control of Electron Beam in Bubble Regime Produced by High Intense Laser-Plasma Interaction**P. Zobdeh¹, R. Sadighi-Bonabi², H. Afarideh¹¹Department of Physics, Amirkabir University of Technology, Tehran, Iran²Department of Physics, Sharif University of Technology, Tehran, Iran**3P45 Evaluation of Laser Pulse Propagation in Plasma During the Bubble Regime by High Intense Laser-Plasma Interaction**P. Zobdeh¹, R. Sadighi-Bonabi², H. Afarideh¹¹Department of Physics, Amirkabir University of Technology, Tehran, Iran²Department of Physics, Sharif University of Technology, Tehran, Iran

Poster Session 3P (Wednesday, June 18, 13:00–14:00 • Poster Area – Foyer)*Radiation Physics, High Energy Density Matter and Laser Produced Plasmas**Chair: Alexander Pukhov, University of Düsseldorf, Germany*

- 3P46 The Measurement of Two Photon Absorption Cross-Section of SF₆ by TEA-CO₂ LASER**
P. Parvin, Z. Kalhor
Physics Department, Amirkabir University of Technology, Tehran, Iran
- 3P47 LIBS of Several Gaseous Components (N₂, Ar, Air and SF₆) in Different Pressures**
P. Parvin¹, S. Abdollahi Jahdi¹, M.A. Bassam²
¹*Amir Kabir University of Technology, Tehran, Iran*
²*Research and Training Institute of Defense Industry*
- 3P48 Study of Wire Explosion in Vacuum at Different Electrode Polarities**
I.I. Beilis¹, R.B. Baksht¹, A.G. Russkikh³, S.A. Chaikovskiy⁴
¹*Tel Aviv University, Israel*
³*Institute of High Current Electronics, RAS, Tomsk, Russia*
- 3P49 A Dynamical Study of Gap Formation in X-Pinch Plasmas at 80kA**
R. Madden, S.C. Bott, D.M. Haas, U. Ueda, Y. Eshaq, G. Collins, F.N. Beg
University of California, San Diego, CA, USA
- 3P50 Spot Size Measurement of the Darht First Axis Radiographic Source**
B.T. McCuistian¹, E. Rose¹, D. Moir¹, H. Bender², C. Carlson², C. Hollabaugh²
¹*Los Alamos National Laboratory, Los Alamos, NM, USA*
²*NSTEC, Los Alamos, NM, USA*
- 3P51 Terahertz Radiation Source From a Static Electric Field Via a Laser-Produced Ionization Front**
H. Nishimai¹, K. Yaegashi¹, H. Hasegawa¹, T. Higashiguchi¹, N. Yugami¹, P. Muggli²
¹*Utsunomiya University, Tochigi, Japan*
²*Department of Electrical Engineering-Electrophysics, University of Southern California, Los Angeles, CA, USA*
- 3P52 Anisotropy of Neutron and Hard X-Rays Radiation in Dena and Sahand, Two Fillipov Type Plasma Focus Devices**
M. Golalikhani^{1,2}, M. Hamzeh Tafreshi⁴, S. Sobhanian¹, M. Jafarizadeh^{2,3}, M.A. Mohammadi¹
¹*Faculty of Physics, University of Tabriz, Tabriz, Iran*
²*National Radiation Protection Department, Atomic Energy Organization of Iran, Tehran, Iran*
³*Agreecultural, Medical and Industrial Research School, Nuclear Science and Technology Research Institut, Atomic Energy Organization of Iran, Tehran, Iran*
⁴*Plasma Physics and Nuclear Fusion Research School, Nuclear Science and Technology Research Institut, Atomic Energy Organization of Iran, Tehran, Iran*
- 3P53 Development of a Compact Laser-Plasma Hard X-Ray Source**
T. Nayuki, Y. Oishi, T. Fujii, K. Nemoto, A.G. Zhidkov
Central Research Institute of Electric Power Industry, Kanagawa, Japan
- 3P54 Electron Temperature and Density Determination in a Non-Equilibrium Laser Induced Plasma From Asymmetric Self-Reversed Emission Lines**
D. Karabourniotis¹, M. Ribiere², B.G. Cheron²
¹*University of Crete, Heraklion, Greece*
²*Université de Rouen, St. Etienne du Rouvray, France*
- 3P55 Nonlinear Interaction of a Rippled Gaussian Beam in Relativistic Plasma and its Effect on Ion-Acoustic Wave**
A. Singh¹, T.S. Gill²
¹*Department of Physics, National Institute Technology, Jalandhar, India*
²*Department of Physics, Guru Nanak Dev University, Amritsar, India*

Poster Session 3P (Wednesday, June 18, 13:00–14:00 • Poster Area – Foyer)*Fast Z-Pinches and X-Ray Lasers III*Chair: *Michael E. Cuneo, Sandia National Laboratories, NM, USA*

- 3P56 Scaling of Radiation Yields of Single and Double Planar Wire Arrays at the 1MA Zebra Generator**
K.M. Williamson, V.L. Kantsyrev, A.S. Safronova, A.A. Esaulov, I. Shrestha, N.D. Ouart, M.F. Yilmaz, G.C. Osborne, V. Shlyaptseva
University of Nevada, Reno, NV, USA
- 3P57 MHD Simulation of Conical Plasma Liners Implosion**
V.A. Gasilov¹, A.S. Boldarev¹, S.V. D'yachenko¹, E.L. Kartasheva¹, O.G. Olkhovskaya¹, E.V. Grabovskiy², V.V. Alexandrov², I.N. Frolov², A.N. Gribov², A.N. Gritsuk², Y.N. Laukhin², S.F. Medovshikov², G.S. Volkov², K.N. Mitrofanov², G.M. Oleynik², A.A. Samokhin², V.I. Zayatsev², P.V. Sasorov³, V.P. Smirnov⁴
¹*Institute for Mathematical Modelling IMM RAS, Moscow, Russia*
²*TRINITI, Troitsk, Russia*
³*Institute for Theoretical and Experimental Physics ITEP, Moscow, Russia*
⁴*Kurchatov Institute, Moscow, Russia*
- 3P58 Experimental Investigation of Wire-Array Z-Pinches on the Cobra Accelerator**
T.A. Shelkovenko, R.D. McBride, K.S. Bell, I.C. Blesener, D.A. Chalenski, J.D. Douglass, J.B. Greenly, P.F. Knapp, S.A. Pikuz, D.A. Hammer, B.R. Kusse
Laboratory of Plasma Studies, Cornell University, Ithaca, NY, USA
- 3P59 Wire Array Load Design and Optimization for Short (100 ns) and Long (220 ns) Current Rise Time on the 1 MA Cobra Generator**
A.A. Esaulov¹, V.L. Kantsyrev¹, A.S. Safronova¹, K.M. Williamson¹, I. Shrestha¹, G.C. Osborne¹, R.D. McBride², P.F. Knapp², D.A. Chalenski², J.B. Greenly², D.A. Hammer²
¹*University of Nevada, Reno, NV, USA*
²*Cornell University, Ithaca, NY, USA*
- 3P60 Implosion Dynamics and Radiation Output of Wire-Array Z-Pinches on the Cobra Pulsed-Power Generator**
R.D. McBride, T.A. Shelkovenko, S.A. Pikuz, D.A. Hammer, J.B. Greenly, B.R. Kusse, J.D. Douglass, P.F. Knapp, K.S. Bell, I.C. Blesener, D.A. Chalenski
Laboratory of Plasma Studies, Cornell University, Ithaca, USA
- 3P61 Designs, Tests and Plans for MAIZE: A 1 MA LTD Driven Z-Pinch**
R.M. Gilgenbach¹, M.R. Gomez¹, J. Zier¹, W. Tang¹, D. French¹, B.W. Hoff¹, N.M. Jordan¹, E. Cruz¹, Y.Y. Lau¹, M.G. Mazarakis², M.E. Cuneo², M.D. Johnston², B.V. Oliver², T.A. Mehlhorn², A.A. Kim³, V.A. Sinebryukhov³
¹*Plasma Pulsed Power and Microwave Lab, University of Michigan, Ann Arbor, MI, USA*
²*Sandia National Laboratories, Albuquerque, NM, USA*
³*Institute for High Current Electronics, Tomsk, Russia*
- 3P62 Quantification of Axially Correlated Ablation in Z-Pinch Wire-Arrays**
J. Zier¹, J.D. Douglass², R.M. Gilgenbach¹, R.D. McBride², D.A. Hammer², B.R. Kusse², J.B. Greenly², W. Syed², D.A. Chalenski², K.S. Bell², P.F. Knapp², Y.Y. Lau¹, W. Tang¹
¹*Plasma, Pulsed-Power, and Microwave Laboratory, Nuclear Engineering Department, University of Michigan, Ann Arbor, MI, USA*
²*Cornell University, Ithaca, NY, USA*
- 3P63 Z-Pinch Wire-Contact Resistance Reduction Using Clamped and Soft Metal Contacts**
M.R. Gomez, J. Zier, D. French, R.M. Gilgenbach, W. Tang, Y.Y. Lau
Plasma, Pulsed Power and Microwave Lab, University of Michigan, Ann Arbor, MI, USA
- 3P64 A Higher Dimensional Theory of Contact Resistance**
W. Tang, Y.Y. Lau, R.M. Gilgenbach, M.R. Gomez, J. Zier
Department of Nuclear Engineering and Radiological Sciences, University of Michigan, Ann Arbor, MI, USA
- 3P65 Distribution of Plasma Parameters Upon Electrical Wire Explosion**
S.I. Tkachenko, V.M. Romanova, T.A. Shelkovenko, A.E. Ter-Oganessian, A.R. Mingaleev, S.A. Pikuz
P.N. Lebedev Physical Institute of Russian Academy of Sciences, Moscow, Russia

- 3P66 Quantitative Measurements of Plasma Structure and Voltage During the Ablation Phase Using an Inverse Wire-Array Z-Pinch**
A. Harvey-Thompson, S.V. Lebedev, S.N. Bland, J.P. Chittenden, G.N. Hall, C. Ning, F. Suzuki-Vidal, G. Swaddling
Blackett Laboratory, Imperial College, London, UK
- 3P67 Simulation of Ablating Wire in Wire Array Z-Pinch**
D.-K. Kim¹, J.P. Chittenden², A.M. Marocchino², S.V. Lebedev²
¹*Technology Research Center, Agency for Defense Development, Daejeon, Korea*
²*Blackett Laboratory, Imperial College, London, UK*
- 3P68 Numerical Modelling of Plasma Ablation in the Multiwire Arrays Experiments**
V.A. Gasilov¹, A.S. Boldarev¹, S.V. D'yachenko¹, E.L. Kartasheva¹, O.G. Olkhovskaya¹, E.V. Grabovski², V.V. Alexandrov², I.N. Frolov², A.N. Gribov², A.N. Gritsuk², Y.N. Laukhin², S.F. Medovshikov², G.S. Volkov², K.N. Mitrofanov², G.M. Oleynik², A.A. Samokhin², V.I. Zayatsev², P.V. Sasorov³, V.P. Smirnov³
¹*Institute for Mathematical Modelling IMM RAS, Moscow, Russia*
²*TRINITI, Troitsk, Russia*
³*Institute for Theoretical and Experimental Physics ITEP, Moscow, Russia*
⁴*Kurchatov Institute, Moscow, Russia*

Poster Session 3P (Wednesday, June 18, 13:00–14:00 • Poster Area – Foyer)

Flat-Panel Displays

Chair: *Karlheinz Blankenbach, University of Applied Sciences, Pforzheim, Germany*

- 3P69 A Study On the Discharge From Various Ramp Waveforms in Shadow Mask Plasma Display Panel**
X. Peilin, T. Yan
School of Electronic Science and Engineering, Southeast University, Nanjing, China
- 3P70 Impedance Matching Operation for the Backlight of External Electrode Fluorescent Lamps**
J. Jeong, J.H. Kim, D. Jin, J. Bong, J. Koo, B. Hong, E. Choi, G. Cho
Kwangwoon University, Seoul, Korea
- 3P71 Study of Inductively Coupled Plasma Effects for ZO:N Thin Films**
D.H. Lee¹, S.K. Lee¹, S.R. Kwon¹, B.H. Chung¹, J.S. Hong¹, J.H. Jeon¹, H.S. Kim¹, Y.M. Kim¹, J.W. Hyun¹, S.J. Noh¹, S.K. Ko²
¹*Dankook University, Gyeonggi-do, Korea*
²*Ulsan University, Ulsan-si, Korea*
- 3P72 Plasma Behavior in a Novel Flexible Plasma Display Panel (PDP) Cell Structure**
T. Rajabioun, K. Niayesh, Z. Katayoun, N. Zehforoosh, S. Mohajerzadeh
School of Electrical and Computer Engineering, University of Tehran, Iran
- 3P73 Spatiotemporal Behavior of Excited Xe Atom Density in the 1s₅ Metastable State According to the Xe Mole Fractions in He-Ne-Xe Ternary Gas Mixtures at Alternating Current Plasma Display Panel (AC-PDP)**
P.Y. Oh, J.H. Kim, Y.J. Hong, S.H. Cho, B.H. Hong, G.S. Cho, E.H. Choi
Charged Particle Beam and Plasma Laboratory, PDP Research Center, Kwangwoon University, Seoul, Korea

Poster Session 3P (Wednesday, June 18, 13:00–14:00 • Poster Area – Foyer)

Optical and X-Ray Diagnostics

Chair: *James E. Bailey, Sandia National Laboratories, NM, USA*

- 3P74 Stoichiometry of Iron Oxide Phases by Laser Induced Breakdown Spectroscopy (LIBS)**
P. Parvin¹, S. Yazdanpanah¹, M.A. Bassam², N. Boyouk³
¹*Physics Department, AmirKabir University of Technology, Tehran, Iran*
²*Research and Training Institute of Defense Industry*
³*Cite Scientifique, Villeneuve d'Ascq, Lille, France*

- 3P75 Real Time Radon Monitoring in the Underground Waters for Earthquake Prediction Using Laser-Induced Plasma Spectroscopy (LIBS)**
G.R. Shyeganrad¹, L. Mashhadi^{1,2}
¹Physics Department, Islamic Azad University, Karaj, Iran
²Physics Department, Amirkabir University of Technology, Tehran, Iran
- 3P76 Measurement of Plasma and Particle Velocities in a Thermal Plasma Jet by Correlation and PIV Methods**
J. Hlina¹, J. Sonsky¹, Z. Sekeresova¹, V. Kopecky², M. Kotek²
¹Institute of Thermomechanics, Academy of Sciences of the Czech Republic, Praha, Czech Republic
²Technical University Liberec, Czech Republic
- 3P77 Investigation of Steam-Air Plasma Generator of Alternating Current**
G.V. Nakonechny, N.V. Alexey, A.V. Pavlov, S.D. Popov, E.O. Serba, A.I. Sakov, O.B. Vasilieva
Institute for Electrophysics and Electric Power, Russian Academy of Sciences, St. Petersburg, Russia
- 3P78 Investigation of Plasma Evolution in a High Power Electron-Beam Diode Using a Two-Frame Laser Shearing Interferometer**
N. Qi¹, J. Goyer¹, B.H. Failor¹, S. Lam¹, J.C. Riordan¹, B. Whitton¹, H. Sze¹, D. Lojewski², A. Verma²
¹L-3 Communications, San Leandro, CA, USA
²Defense Threatening Reduction Agency, Albuquerque, NM, USA
- 3P79 Cubic Spline Interpolation for Inverse Abel Transform Integral Equation - Application to Plasma Spectroscopy**
C.D. Gavrilă¹, I. Gruia²
¹Technical University of Civil Engineering Bucharest, Romania
²University of Bucharest, Romania
- 3P80 Influence of Oxygen Traces on Pure Nitrogen Post-Discharge Kinetics**
I. Soural, F. Krcma, V. Mazankova
Faculty of Chemistry, Brno University of Technology, Czech Republic
- 3P81 New Modes of X Pinch Backlighting on COBRA**
I.C. Blesener, K.S. Bell, D.A. Chalenski, J.B. Greenly, P.F. Knapp, R.D. McBride, P.C. Schrafel, D.A. Hammer, B.R. Kusse
Laboratory of Plasma Studies, Cornell University, Ithaca, NY, USA
- 3P82 Theoretical Development of X-Ray Diagnostics of Tungsten Ions for Fusion and HEDP Applications**
A.S. Safronova¹, U.I. Safronova¹, V.L. Kantsyrev¹, G.C. Osborne¹, N.D. Quart¹, K.M. Williamson¹, I. Shrestha¹, P. Beiersdorfer²
¹University of Nevada, Reno, NV, USA
²Lawrence Livermore National Laboratory, CA, USA
- 3P83 X/γ-rays Detection During Streamer Development**
C.V. Nguyen, A.P.J. van Deursen
Eindhoven University of Technology, The Netherlands
- 3P84 X-Ray Spectrum Measurement up to 1600 keV From Absorption Data**
B. Etchessahar, R. Rosol
¹CEA, PEM, Pontfaverger-Moronvilliers, France

Poster Session 3P (Wednesday, June 18, 13:00–14:00 • Poster Area – Foyer)

Microwave, FIR and Particle Diagnostics

Chair: Garrard Conway, MPI for Plasmaphysics, Garching, Germany

- 3P85 Microwave Interferometry for High Pressure Non-Thermal Pulsed Plasma**
X. Lu¹, M. Laroussi²
¹HuaZhong University of Science and Technology, Wuhan, China
²Laser & Plasma Engineering Institute, Old Dominion University, Norfolk, VA, USA
- 3P86 A New Diagnostic Tool for Low Temperature Plasmas - the Multipole Resonance Probe**
M. Lapke, T. Mussenbrock, R.P. Brinkmann
Institute for Theoretical Electrical Engineering, Ruhr-University Bochum, Germany
- 3P87 A New Far-Infrared Polarimeter on the Tokamak A Configuration Variable**
A. Zhuchkova, H. Weisen, R. Behn, P. Blanchard
Centre de Recherches en Physique des Plasmas, EPFL, Switzerland

- 3P88 Time Evolution of Fast Ions Created in an Expanding Helicon Plasma**
 I.A. Biloiu¹, E.E. Scime¹, C. Biloiu²
¹West Virginia University, Morgantown, WV, USA
²Varian Semiconductor Equipment Associates, Gloucester, MA, USA
- 3P89 Plasma Description with Optical Signal Propagation Along the Fine Tube of Positive Column Discharge**
 J.H. Kim, J. Jeong, D. Jin, J. Bong, H. Hwang, J. Jeong, J. Koo, B. Hong, E. Choi, G. Cho
 Kwangwoon University, Seoul, Korea
- 3P90 Deduction of Mach Numbers with Charge-Exchange and Recombination**
 K.S. Chung¹, H.J. Woo¹, T. Lho²
¹Dept. of Electrical Eng., Hanyang University, Seoul, Republic of Korea
²National Fusion Research Institute, Daejeon, Republic of Korea

Poster Session 3P (Wednesday, June 18, 13:00–14:00 • Poster Area – Foyer)

Compact Pulsed Power and Applications

Chair: Weihua Jiang, Nagaoka University of Technology, Japan

- 3P91 Numerical Simulation of Pulsed Wire Discharge for Nano-Powder Production**
 Z. Mao, X. Zou, X.-Y. Liu, X. Wang
 Department of Electrical Engineering, Tsinghua University, Beijing, China
- 3P92 3D EM Modeling of Large-Scale Pulsed Power Accelerator Systems**
 D.V. Rose¹, E.A. Madrid¹, D.R. Welch¹, R.E. Clark¹, C.B. Mostrom¹, W.A. Stygar²
¹Voss Scientific, LLC, Albuquerque, NM, USA
²Sandia National Laboratories, Albuquerque, NM, USA
- 3P93 Experiments with Plasma Armature for Railgun at Zero Speed**
 P. Liu¹, J. Li¹, Y. Gui¹, Sh. Li¹, J. Nie²
¹Beijing Institute of Special Electromechanical Technology, Beijing, P.R. China
²Beijing Institute of Technology, P.R. China
- 3P94 Fundamental Characteristics of Coilgun**
 S. Furuya, Y. Uehara
 Gunma University, Maebashi, Japan
- 3P95 A New Approach to Enhance the Output Power of an HMFCG**
 Z. Dong¹, C. Yu¹, Q. Zhao¹, X. Yang¹, F. Xu¹
¹Institute of Applied Physics and Computational Mathematics, Beijing, P.R. China
- 3P96 Research of Operation Features of Electrode Units of High-Voltage Plasma Generators of Alternating Current, Definition of the Criteria Influencing the Electrode Lifetime at Plasma Generator Operation on Steam**
 A.V. Surov, V.A. Spodobin, R.V. Ovchinnikov, S.A. Kushev, S.A. Lukyanov, V.N. Shiryayev, V.E. Kuznetsov
 Institute for Electrophysics and Electric Power, Russian Academy of Sciences, St. Petersburg, Russia
- 3P97 Studies of Power-Flow Oscillations in the RITS-6 Induction Voltage Adder Accelerator**
 N. Bruner¹, E.A. Madrid¹, D.V. Rose¹, D.R. Welch¹, K. Hahn², B.V. Oliver²
¹Voss Scientific, LLC, Albuquerque, NM, USA
²Sandia National Laboratories, Albuquerque, NM, USA
- 3P98 RF Plasma Heating with SIT Inverter Power Source**
 S.M. Islam¹, M. Kamruzzaman¹, N.S. Sudha¹, M.A. Razzak¹, S. Takamura²
¹Independent University, Dhaka, Bangladesh
²Aichi Institute of Technology, Toyota, Japan
- 3P99 Development of High Rep-Rate Pulse Detonation Engines Based on Transient Plasma Ignition Technology**
 D. Singleton¹, M.A. Gundersen¹, C. Brophy², J. Sinibaldi², J.W. Luginsland³
¹University of Southern California, Los Angeles, CA, USA
²Naval Postgraduate School, Monterey, CA, USA
³NumerEx, Ithaca, NY, USA
- 3P100 Characterization and Optimization of a Flash X-Ray Source for Dense Spray Radiography**
 E. Romero, C. Cachoncinlle, E. Robert, R. Viladrosa, G. Coudrat, S. Dozias, J.-M. Pouvesle
 GREMI-Polytech'Orléans, France

Oral Sessions on Wednesday Afternoon, June 18

Oral Session 6A (Wednesday, June 18, 15:30–18:00 • Club Room)

*Optical and X-Ray Diagnostics*Chair: *Christine A. Coverdale, Sandia National Laboratories, NM, USA***6A1 Plasma Diagnostics Using Computed Tomography Method (Invited Keynote)**15:30 N.V. Denisova–16:00 *Institute of Theoretical and Applied Mechanics, Novosibirsk, Russia***6A2 Ion-Temperature and Rotation-Velocity Profile Measurements From a Spatially Resolving X-Ray Crystal Spectrometer on the Alcator C-Mod Tokamak (Invited Keynote)**

16:00

–16:30 K.W. Hill¹, M. Bitter¹, S.D. Scott¹, A. Ince-Cushman², J.E. Rice², M. Reinke², P. Beiersdorfer³, M.F. Gu³, S.G. Lee⁴, C. Broennimann⁵, E.F. Eikenberry⁵¹*Princeton University, NJ, USA*²*PSFC, MIT, Cambridge, MA, USA*³*LLNL, Livermore, CA, USA*⁴*NFRC, Korea Basic Science Institute, Daejeon, Korea*⁵*DECTRIS Ltd., Villigen-PSI, Switzerland***6A3 Recurrent Properties of Coherent Structures in a Thermal Plasma Jet**16:30 J. Hlina, J. Sonsky–16:45 *Institute of Thermomechanics, Academy of Sciences of the Czech Republic, Praha, Czech Republic***6A4 Characteristics of the Different Plasma Regimes of Discharges with Water Cathodes**16:45 P. Bruggeman¹, Ch. Leys¹, J. Degroote², J. Vierendeels²–17:00 ¹*Ghent University, Department of Applied Physics, Belgium*²*Ghent University, Department of Flow, Heat and Combustion Mechanics, Belgium***6A5 Spectroscopic Analysis of Microwave Generated Plasmas (Invited Keynote)**17:00 M. Leins, A. Schulz, M. Walker, U. Schumacher–17:30 *Institut für Plasmaforschung, Universität Stuttgart, Germany***6A6 Optical and Electrical Measurements of a Novel Dielectric Barrier Discharge System Exhibiting Species Gain**

17:30

–17:45 K. Arshak¹, I. Guiney¹, E. Forde²¹*Department of Electronic and Computer Engineering, University of Limerick, Ireland*²*Allied Plasma Ltd., Ireland***6A7 Gas Temperature Measurement in a Dielectric Barrier Discharge by Argon Atomic Spectral Line**

17:45

–18:00 L. Dong, Y. Qi, Z. Zhao*College of Physics Science and Technology, Hebei University, Baoding, China*

Oral Session 6B (Wednesday, June 18, 15:30–18:00 • Room 2.05)

Codes and Modeling

Chair: Thomas M. Antonsen Jr., University of Maryland, MD, USA

- 6B1 Advances in Modeling Microwave Window Breakdown (Invited Keynote)**
 15:30 J.P. Verboncoeur¹, S.K. Nam¹, Y.Y. Lau²
 –16:00 ¹University of California, Berkeley, CA, USA
²University of Michigan, Ann Arbor, MI, USA
- 6B2 Statistics of High Power Microwave Induced Window Flashover**
 16:00 A. Neuber, G. Edmiston, J. Krile, J. Foster, H. Krompholz
 –16:15 Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, USA
- 6B3 Numerical Model of the Plasmaline Microwave Plasma Source**
 16:15 C. Hunyar, E. Räu chle, M. Graf, L. Alberts, M. Kaiser, K. Nauenburg
 –16:30 Fraunhofer Institut für Chemische Technologie (ICT), Pfinztal, Germany
- 6B4 Collector Design with Time Dependent Spent Beam Using the MICHELLE Code**
 16:30 J. Petillo¹, D. Panagos², K. Nguyen³, B. Held⁴, J. DeFord⁴, B. Levush⁵
 –16:45 ¹SAIC, Billerica, USA
²Gnosys, Inc
³BW Research, Inc
⁴STAAR
⁵US NRL, USA
- 6B5 Simulating the Effect of Secondary Emission in the Collector of High Power CW Gyrotrons**
 16:45 S. Illy, B. Piosczyk
 –17:00 Research Center Karlsruhe (FZK), IHM, Germany
- 6B6 Neptune: an Efficient Time Dependent 3D Simulations of Coherent Radiation Sources**
 17:00 M. Botton¹, T.M. Antonsen¹, S.J. Cooke², B. Levush², I.A. Chernyavskiy³, A.N. Vlasov³
 –17:15 ¹University of Maryland, College Park, MD, USA
²Naval Research Laboratory, Washington, DC, USA
³SAIC, McLean, VA, USA
- 6B7 Frequency Domain Simulation of Drive Induced Oscillation in a Coupled-Cavity TWT**
 17:15 D. Chernin¹, D. Dialetis¹, T.M. Antonsen¹, J. McDonald², B. Levush², J. Legarra³
 –17:30 ¹SAIC, McLean, VA, USA
²Naval Research Laboratory, Washington, DC, USA
³CPI, Palo Alto, CA, USA
- 6B8 TESLA Modelling of Klystrons with Multigap Resonators**
 17:30 A.N. Vlasov¹, I.A. Chernyavskiy¹, T.M. Antonsen², K.T. Nguyen³, D.E. Pershing³, S.J. Cooke⁴, D.K. Abe⁴,
 –17:45 B. Levush⁴
¹Science Applications International Corporation, McLean, VA, USA
²University of Maryland, College Park, MD, USA
³Beam-Wave Research Inc., Bethesda, MD, USA
⁴Naval Research Laboratory, Washington, DC, USA
- 6B9 Single and Multiple Beam Klystron Modeling with TESLA**
 17:45 I.A. Chernyavskiy¹, A.N. Vlasov¹, T.M. Antonsen², S.J. Cooke³, D.K. Abe³, B. Levush³, K.T. Nguyen⁴
 –18:00 ¹SAIC, McLean, VA, USA
²University of Maryland, College Park, MD, USA
³Naval Research Laboratory, Washington, DC, USA
⁴Beam-Wave Research, Inc., Bethesda, MD, USA

Oral Session 6C (Wednesday, June 18, 15:30–18:00 • Hebel Saal)*Plasmas for Lighting and Flat-Panel Displays I*Chair: *Peter Flesch, OSRAM GmbH-Berlin, Germany*

- 6C1 The Effects of Electrode Structures on the Luminous Efficacy of Micro Dielectric Barrier Discharges (Invited Keynote)**
 15:30
 –16:00 I.S. Song, H.J. Yoon, J.-W. Ok, D.-H. Kim, H.-J. Lee, C.-H. Park, H.J. Lee
Department of Electrical Engineering, Pusan National University, Busan, South Korea
- 6C2 A Dimming Experiment on Moving Striations in 50Hz AC Operated Fluorescent Lamp**
 16:00 Y. Liu¹, D. Buso¹, S. Bhosle¹, G. Zissis¹, D. Chen²
 –16:15 ¹ *Universite de Toulouse, France*
² *Institute for Electrical Light Sources, Fudan University, Shanghai, China*
- 6C3 Characteristics of the Microplasma Generated in a Flexible Plasma Device**
 16:15 S.H. Kim, J.H. Mun, K.Y. Yang, K.J. Kim, K.C. Choi
 –16:30 *Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea*
- 6C4 Application of a 150 GHz Interferometer to Fluorescent Lamps**
 16:30 R.C. Garner
 –16:45 *OSRAM Sylvania, Central Research and Services Laboratory, Beverly, MA, USA*
- 6C5 Potentialities of Neon Xenon Pulsed Discharges for Publicity and Architectural Lighting**
 16:45 S. Point, E. Robert, S. Dozias, C. Cachoncinlle, R. Viladrosa, J.-M. Pouvesle
 –17:00 *Université d'Orléans, France*
- 6C6 Axial Segregation in a Metal-Halide Lamp at 1–10G Measured by Emission Spectroscopy**
 17:00 A.J. Flikweert¹, L. Navarro², T. Nimalasuriya¹, G.M.W. Kroesen¹, W.W. Stoffels¹
 –17:15 ¹ *Applied Physics, Eindhoven University of Technology, Netherlands*
² *École Polytechnique de l'Université d'Orléans, France*
- 6C7 Significant Efficacy Enhancement of Low Wattage Metal Halide HID Lamp Systems by Acoustically Induced Convection Configuration**
 17:15
 –17:30 K. Stockwald, H. Kaestle, H. Weiss
OSRAM GmbH, Munich, Germany
- 6C8 Threshold Current Density for Homogeneous Excitation of Pulsed Xenon Excimer DBD**
 17:30 M. Paravia, K.E. Trampert, W. Heering
 –17:45 *University of Karlsruhe, LTI, Germany*
- 6C9 Numerical Investigation of Different Modes of Arc Attachment at Tungsten Cathodes in Dependence on the Electrode Geometry**
 17:45
 –18:00 F.H. Scharf¹, J. Mentel², M. Szelong¹
¹ *Lehrstuhl für Theoretische Elektrotechnik, Ruhr-Universität Bochum, Germany*
² *Lehrstuhl für Allgemeine Elektrotechnik und Plasmatechnik, Ruhr-Universität Bochum, Germany*

Oral Session 6D (Wednesday, June 18, 15:30–18:00 • Mombert Saal)

*Medical, Biological and Environmental Applications III*Chair: *Xinpei Lu, HuaZhong University of Science and Technology, Wuttan, P.R. China*

- 6D1 Chemical Reaction Analysis of the Formation of Hydrogen Peroxide and Hydrogen in Water-Spray Gliding Arc Reactors (Invited Keynote)**
 15:30
 –16:00 B.R. Locke¹, S. Mededovic²
¹Florida State University, FL, USA
²Toyohashi University of Technology, Japan
- 6D2 The Protein Modification in the Electron Beam Plasmachemical Reactor with the Aerosol Reaction Bulk**
 16:00
 –16:15 T.M. Vasilieva, A.H. Mahir
 Moscow Institute of Physics and Technology, Russia
- 6D3 Plasma and Vacuum Ultraviolet Assisted Engineering of Medical Polymers**
 16:15 V.N. Vasilets¹, V.I. Sevastianov²
 –16:30 ¹Institute for Energy Problems of Chemical Physics - Russian Academy of Sciences, Chernogolovka, Russia
²Research Institute for Transplantology and Artificial Organs, Moscow, Russia
- 6D4 Application of Greed Type DBD in Diesel Engine Exhausts Cleaning**
 16:30 V.Y. Plaksin, H.J. Lee, O.V. Penkov
 –16:45 Faculty of Mechanical & Energy System Engineering, Cheju National University, Jeju, Korea
- 6D5 Decontamination of Chemical Warfare Agent Simulator Dimethyl Methylphosphonate (DMMP) Using RF Large Area Non-Thermal Atmospheric Pressure Plasma**
 16:45
 –17:00 D.B. Kim, B. Gweon, S.Y. Moon, W. Choe
 Korea Advanced Institute of Science and Technology, Daejeon, Korea
- 6D6 Effect of Solution Conductivity on H₂O₂ Production by Pulsed Corona Discharge in Water**
 17:00 P. Lukes¹, M. Clupek¹, V. Babicky¹, P. Sunka¹, I. Tothova², V. Janda²
 –17:15 ¹Institute of Plasma Physics, Prague, Czech Republic
²Institute of Chemical Technology, Prague, Czech Republic
- 6D7 Pulse Corona Discharge in Water**
 17:15 Z. Liu¹, A.J.M. Pemen¹, G.J.J. Winands¹, E.J.M. Van Heesch¹, K. Yan²
 –17:30 ¹Electrical Engineering, Eindhoven University of Technology, The Netherlands
²Department of Environmental Science, Zhejiang University, Hangzhou, China
- 6D8 ECR Microwave Plasma Modified TiO₂ Ceramic for Biomedical Application**
 17:30 M. Willert-Porada, E. Fuchs
 –17:45 University of Bayreuth, Germany
- 6D9 Topological Model for Energy Transmission Through Cells in a Cuvette**
 17:45 B. Camps-Raga¹, S. Tantong¹, P. Kirawanich¹, N.E. Islam¹, C.E. Baum²
 –18:00 ¹Electrical and Computer Engineering Department, University of Missouri, Columbia, MO, USA
²Electrical and Computer Engineering Department, University of New Mexico, Albuquerque, NM, USA

Oral Session 6E (Wednesday, June 18, 15:30–18:00 • Room 2.08)*Plasma Thrusters*Chair: *Monika Auweter-Kurtz, University of Hamburg, Germany*

- 6E1 Fast and Slow Ion Populations in Expanding Helicon Plasma Observed by Laser Induced Fluorescence Tomography (Invited Keynote)**
 15:30
 –16:00 I.A. Biloiu, E.E. Scime
Physics Department, West Virginia University, Morgantown, WV, USA
- 6E2 Control and Propulsion of an Atmospheric Pressure Plasma Ring**
 16:00 L.M. Shpanin¹, G.R. Jones², J.W. Spencer², B.E. Djakov³
 –16:15 ¹*Department of Electronic, Electrical and Computer Engineering, University of Birmingham, UK*
²*Department of Electrical and Electronics Engineering, University of Liverpool, UK*
³*Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria*
- 6E3 Intra-Species Charged Particle Collisions for PIC Simulations**
 16:15 D. D'Andrea¹, R. Schneider¹, C.-D. Munz²
 –16:30 ¹*Research Center Karlsruhe (FZK), IHM, Germany*
²*Institut für Aerodynamik und Gasdynamik, Universität Stuttgart, Germany*
- 6E4 Electron Kinetic Effects and Beam-Related Instabilities in Hall Thrusters**
 16:30 D. Sydorenko¹, A. Smolyakov¹, I. Kaganovich², Y. Raitses²
 –16:45 ¹*Department of Physics and Engineering Physics, University of Saskatchewan, Saskatoon, Canada*
²*Plasma Physics Laboratory, Princeton, NJ, USA*
- 6E5 Convergence, Stability and Accuracy of a New High Order Relativistic Particle Push Method**
 16:45 M. Quandt¹, C.-D. Munz¹, R. Schneider²
 –17:00 ¹*Institut für Aerodynamik und Gasdynamik, Universität Stuttgart, Germany*
²*Research Center Karlsruhe (FZK), IHM, Germany*
- 6E6 Development of Electric Propulsion Systems at IRS (Invited Keynote)**
 17:00 G. Herdrich¹, M. Auweter-Kurtz², D. Bock¹, M. Fertig¹, D. Haag¹, A. Nawaz¹, H. Röser¹
 –17:30 ¹*IRS, University of Stuttgart, Germany*
²*Hamburg University, Germany*
- 6E7 Simulation of Control System of Plasma Thrusters Using Advanced Genetic Algorithm**
 17:30 K. Bhaskaran, G. Gururaghav
 –17:45 *Government College of Technology, Coimbatore, India*
- 6E8 A Two-Dimensional Particle-In-Cell Simulation of Stationary Plasma Thruster Discharges**
 17:45 H.J. Lee¹, W.S. Lim¹, W. Choe², J. Seon³
 –18:00 ¹*Department of Electrical Engineering, Pusan National University, Busan, South Korea*
²*Department of Physics, Korea Advanced Institute of Science and Technology, Daejeon, South Korea*
³*Satrec Initiative, Daejeon, South Korea*

Oral Sessions on Thursday Morning, June 19

Oral Session 7A (Thursday, June 19, 09:30–12:00 • Club Room)

Dusty Plasmas II

Chair: Michael Kretschmer, MPI for Extraterrestrial Physics, Garching, Germany

7A1 3D Dust Clouds (Yukawa Balls) in Strongly Coupled Dusty Plasmas (Invited Keynote)09:30 A. Melzer¹, S. Käding¹, Y. Ivanov¹, D. Block², A. Piel²–10:00 ¹*Institute of Physics, University Greifswald, Germany*²*IEAP, University Kiel, Germany***7A2 Basic Mechanisms of Circulation in Complex Plasmas (Invited Keynote)**10:00 S.K. Zhdanov, M. Rubin-Zuzic, H.M. Thomas, G. Morfill–10:30 *Max-Planck-Institut Für Extraterrestrische Physik, Garching, Germany***7A3 Localized Electrostatic Excitations in e-p-i Plasmas and Fullerene Pair Ion Plasma Doped with Dust Defects**10:30 A. Esfandyari-Kalejahi¹, M. Mehdipoor², I. Kourakis³¹*Azerbaijan University of Tarbiat Moallem, Tabriz, Iran*²*Department of Physics, Payam Noor University, Gonbad, Iran*³*Center for Plasma Physics, Queen's University Belfast, Northern Ireland, UK***7A4 Polycrystalline Structure of Dust Formations Formed in Striations in Glow Discharge**10:45 V.Yu. Karasev, E.S. Dzlieva, A.Yu. Ivanov–11:00 *St.-Petersburg State University, Russia***7A5 Statistical Cell-Like Model in the Heterogeneous Plasma System Theory**11:00 V. Marenkov–11:15 *I.I. Mechnikov Odessa National University, Ukraine***7A6 Localized Excitations in Dusty Plasma Crystals: a Survey of Theoretical Results**11:15 I. Kourakis¹, P.K. Shukla², V. Koukoulouyannis³, B. Farokhi⁴–11:30 ¹*Centre for Plasma Physics, Queen's University Belfast, UK*²*Theoretische Physik IV, Ruhr Universität Bochum, Germany*³*School of Physics, Aristotle University of Thessaloniki, Greece*⁴*Department of Physics, Arak-University, Iran***7A7 On the Existence of Rarefactive Solitons in Dusty Plasma Lattices**11:30 I. Kourakis–11:45 *Centre for Plasma Physics, Queen's University Belfast, UK*

Oral Session 7B (Thursday, June 19, 09:30–12:00 • Room 2.05)*Microwave Systems and Microwave Plasma Interaction*Chair: *Gregory Denisov, Institute of Applied Physics, RAS, Russia*

- 7B1 Source of Multicharged Ions and Extreme Ultraviolet Radiation Based on Plasma Sustained by Gyrotron Radiation (*Invited Keynote*)**
 09:30
 –10:00 A. Vodopyanov
Institute of Applied Physics, RAS, Nizhny Novgorod, Russia
- 7B2 Microwave Resonance Discharge as a Source of UV Radiation**
 10:00 E.M. Barkhudarov¹, I.A. Kossyi¹, M.A. Misakyan¹, N.V. Denisova²
 –10:15 ¹*A.M. Prokhorov General Physics Institute of RAS, Moscow, Russia*
²*Institute of Theoretical and Applied Mechanics of SD RAS, Novosibirsk, Russia*
- 7B3 Low Power Microwave Conductivity of Atmospheric Pressure Plasma**
 10:15 H.-E. Porteanu, S. Kühn, R. Gesche
 –10:30 *Ferdinand-Braun-Institut für Höchstfrequenztechnik, Berlin, Germany*
- 7B4 Development of Filamentary Structure of Atmospheric Breakdown on 170 GHz Gaussian Beam**
 10:30
 –10:45 Y. Oda¹, K. Kajiwara¹, K. Takahashi¹, A. Kasugai¹, K. Sakamoto¹, K. Komurasaki²
¹*Japan Atomic Energy Agency, Naka, Japan*
²*The University of Tokyo, Kashiwa, Japan*
- 7B5 Measurements of 193 nm Laser Air Breakdown and Scaling to the Microwave Regime**
 10:45 M. Thiyagarajan, J. Scharer, J. Way, J. Hummelt
 –11:00 *University of Wisconsin-Madison, Madison, WI, USA*
- 7B6 Localised Defects in One-Dimensional Periodic Structures and Relative Phase Measurements of the Radiation Passed Through the Periodic Lattice**
 11:00
 –11:15 I.V. Konoplev, P. MacInnes, A.W. Cross, K. Ronald, A.D.R. Phelps
SUPA, University of Strathclyde, Glasgow, UK
- 7B7 Microwave Curing of Composite Structures at HEPHAISTOS Experimental Centre (HEC)**
 11:15 L. Feher¹, V. Nuss¹, R. Wiesehöfer²
 –11:30 ¹*Research Center Karlsruhe (FZK), IHM, Germany*
²*Vötsch Industrietechnik, Reiskirchen, Germany*
- 7B8 Efficiency Enhancement of Gyrotron Based Setups for Technological Applications**
 11:30 M.M. Morozkin, Y.V. Bykov, G.G. Denisov, M.Y. Glyavin, A.G. Luchinin, D.I. Sobolev
 –11:45 *Institute of Applied Physics, Russian Academy of Sciences, Nizhny Novgorod, Russia*
- 7B9 Lab-Scale System for Microwave and Plasma Experiments**
 11:45 N. Tran
 –12:00 *Swinburne University of Technology, Australia*

Oral Session 7C (Thursday, June 19, 09:30–12:00 • Hebel Saal)*Plasmas for Lighting and Flat-Panel-Displays II*Chair: *Karlheinz Blankenbach, University of Applied Sciences, Pforzheim, Germany*

- 7C1 Modeling of a Projector Lamp Operated by a U-Drive Pulse Power Source**
 09:30 *K.C. Paul, T. Takemura, T. Hiramoto, T. Igarashi*
 –09:45 *R&D Center, Ushio Inc., Gotenba, Japan*
- 7C2 Temperature Determination From Self-Reversed Resonance Lines**
 09:45 *S. Franke, H. Schneidenbach*
 –10:00 *Leibniz-Institute for Plasma Science and Technology, Greifswald, Germany*
- 7C3 A THz Interferometer for Measurement of Plasma Density in High Intensity Discharge Lamps**
 10:00 *A. Kieckhafer, J. Curry*
 –10:15 *National Institute of Standards and Technology, Gaithersburg, MD, USA*
- 7C4 Breakdown Characteristics of Metal Halide Plasma Lamps**
 10:15 *S. Peters¹, M. Kettlitz¹, M. Wendt¹, A. Kloss²*
 –10:30 ¹*INP Greifswald, Germany*
²*OSRAM GmbH, München, Germany*
- 7C5 The Effect of Hydrogen Iodide on the Ignition of Hg-Free Metal Halide Lamps**
 10:30 *E.G. Estupinan, R.M. Pereyra, W.P. Lapatovich*
 –10:45 *Central Research and Services Laboratory, Osram Sylvania, Beverly, MA, USA*
- 7C6 Vacuum Ultraviolet Radiation Source Based on the 2nd Emission Continuum of the Neon Excimer ($\lambda \sim 84$ nm) Generated by a “Windowless” Dielectric Barrier Discharge**
 10:45 *R.J. Carman, D.M. Kane, B.K. Ward*
 –11:00 *Physics Dept, Macquarie University, Sydney, Australia*
- 7C7 High Pulse Radiating Power Excilamps**
 11:00 *V.F. Tarasenko, M.V. Erofeev, M.I. Lomaev, D.V. Rybka*
 –11:15 *High Current Electronics Institute, Tomsk, Russia*
- 7C8 Time-Resolved Observation of Laser-Assisted Discharge Plasmas for EUV Sources**
 11:15 *S. Katsuki, N. Tomimaru, T. Sakugawa, H. Akiyama*
 –11:30 *Kumamoto University, Japan*
- 7C9 Unified Modelling of Near-Electrode Non-Equilibrium Layers in High-Pressure Arc Discharges**
 11:30 *N.A. Almeida¹, M.S. Benilov¹, G.V. Naidis²*
¹*Departamento de Física, Universidade da Madeira, Funchal, Portugal*
²*Institute for High Temperatures RAS, Moscow, Russia*
- 7C10 UV Light Sources with Microwave Excited Molecular Gas Plasmas**
 11:45 *J.-S. Oh¹, B.K. Pramanik², K. Kawamura², A. Hatta²*
 –12:00 ¹*Japan Science and Technology Agency, Kami, Japan*
²*Kochi University of Technology, Kami, Japan*

Oral Session 7D (Thursday, June 19, 09:30–12:00 • Mombert Saal)*Compact Pulsed Power and Applications*Chair: *Vladimir Engelko, Efremov Institute of Electrophysical Apparatus, St. Petersburg, Russia***7D1 MHz Pulsed Power by Semiconductor Devices**09:30 W. Jiang¹, T. Yokoo¹, K. Saiki¹, K. Hisayama¹, K. Narita¹, K. Takayama², M. Wake², N. Shimizu³–09:45 ¹*Nagaoka University of Technology, Japan*²*High Energy Accelerator Research Organization (KEK), Tsukuba, Japan*³*Corporate Technical Center, NGK Insulators Ltd., Nagoya, Japan***7D2 Subnanosecond Rise Time of High Voltage Pulses in Ferrite Loaded Coaxial Line**09:45 I.V. Romanchenko, V.V. Rostov, O.B. Kovalchuk, V.O. Kutenkov–10:00 *Institute of High Current Electronics, Siberian Branch, Russian Academy of Sciences, Tomsk, Russia***7D3 Optimization and Characterization of a 1.5 kV, 100 ps Rise Time, All-Solid-State Pulse Generator**10:00 L.M. Merensky¹, A.F. Kardo-Sysoev², A.N. Flerov³, A. Pokryvailo¹, D. Shmilovitz⁴, A.S. Kesar¹¹*Soreq NRC, Yavne, Israel*²*Ioffe PTI, St. Petersburg, Russia*³*The Baltic State Technical University "VOENMEKH" named D.F. Ustinov, St. Petersburg, Russia*⁴*Faculty of Engineering, Tel Aviv University, Ramat Aviv, Israel***7D4 Load Line Evaluation of a 1-MV Linear Transformer Driver (LTD)**10:15 J.J. Leckbee¹, S. Cordova¹, B.V. Oliver¹, D.L. Johnson², B. Bui³–10:30 ¹*Sandia National Laboratories, Albuquerque, NM, USA*²*L-3 Communications - Pulse Sciences, San Leandro, CA, USA*³*K-Tech Corporation, Albuquerque, NM, USA***7D5 New Utilization of Compact Tesla Transformer for Multi-Channel Triggering of Field Distortion Spark Gap Switch**10:30 M.M.D. Attaran, E. Kamali Aghdam, S. Toroghi–10:45 *PulseNiru Company, Tehran, Iran***7D6 Magnetic Pulse Compression in Pulse Transformers with Segmented Saturable Magnetic Cores**

10:45 E. Agheb, K. Niayesh, E. Hashemi, J. Jadidian, A.A. Shayegani-Akmal

–11:00 *School of Electrical and Computer Engineering, University of Tehran, Iran***7D7 Pulse Operation Modes of Hybrid Plasma Generators**11:00 M.N. Vasiliev, A.H. Mahir, T.M. Vasilieva–11:15 *Moscow Institute of Physics and Technology, Russia***7D8 Pulsed Powered Plasma Blasting for Lunar Materials Processing**11:15 M.E. Baltazar-Lopez¹, S. Best¹, H. Brandhorst¹, M. Heffernan², F. Rose²–11:30 ¹*Space Research Institute, Auburn University, AL, USA*²*Radiance Technologies, Auburn, AL, USA***7D9 Pulsed Low Frequency Plasma Source**11:30 C. Teske, J. Jacoby–11:45 *Johann Wolfgang Goethe University, Institute for Applied Physics, Frankfurt a.M., Germany***7D10 High-Density Magnetohydrodynamic Energy Conversion**11:45 T. Murakami, Y. Okuno–12:00 *Tokyo Institute of Technology, Yokohama, Japan*

Oral Session 7E (Thursday, June 19, 09:30–12:00 • Room 2.08)

Computational Plasma Physics II

Chair: Claus-Dieter Munz, University of Stuttgart, Germany

- 7E1 Boundary Integral Corrected Particle-In-Cell (Invited Keynote)**
 09:30 A. Christlieb¹, K. Cartwright²
 –10:00 ¹Michigan State University, Mathematics, East Lansing, MI, USA
²Air Force Research Lab-DEHE, NM, USA
- 7E2 A Renormalization Group Approach to Particle-In-Cell Weighting for Dense Plasmas (Invited Keynote)**
 10:00 J.W. Luginsland¹, R. Caflisch², A. Christlieb³, D. Vvendsky⁴
 –10:30 ¹NumerEx, Ithaca, NY, USA
²UCLA, Los Angeles, CA, USA
³MSU, East Lansing, MI, USA
⁴Imperial College, London, UK
- 7E3 Accelerating Temporal Convergence**
 10:30 B. Ong¹, A. Christlieb¹, J.-M. Qiu¹, R. Krasny²
 –10:45 ¹Michigan State University, East Lansing, MI, USA
²University of Michigan, Ann Arbor, MI, USA
- 7E4 Multiple Solutions in the Theory of Near-Cathode Layers and Self-Organization on DC Glow Cathodes**
 10:45 P.G.C. Almeida, M.S. Benilov
 –11:00 ¹Departamento de Fisica, Universidade da Madeira, Funchal, Portugal
- 7E5 On Using Matlab in Solving Differential Algebraic Equations in MHD**
 11:00 O. Hizkiyahu, W. Marszalek
 –11:15 DeVry University, North Brunswick, NJ, USA
- 7E6 Electrical Conductivity of Dense Quantum Plasma in Wigner Representation (Invited Keynote)**
 11:15 V.S. Filinov^{1,2}, P.R. Levashov¹, M. Bonitz², V. Fortov¹
 –11:45 ¹Joint Institute for High Temperatures, Russian Academy of Sciences, Moscow, Russia
²Christian-Albrechts-Universität zu Kiel, Institut für Theoretische Physik und Astrophysik, Germany
- 7E7 Influence of Particle Distribution Function on Plasma Expansion Into Vacuum**
 11:45 H. Abbasi, R. Shokoohi
 –12:00 Faculty of Physics, Amirkabir University of Technology, Tehran, Iran

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