

**IEEE PULSED POWER AND PLASMA SCIENCE
CONFERENCE 2019**

23-28 June 2019

Orlando, Florida

Monday AM

Session: 1Plenary

Plenary Mon AM - Martin Gundersen

Monday 8:15 Room: Seminole Ballroom

Session Chair: Susan Heidger

PULSED POWER AND TRANSIENT PLASMA WITH BIOMEDICAL, DEFENSE, ENERGY, AND ENVIRONMENTAL APPLICATIONS

Martin Gundersen¹

1. University of Southern California

Session: 1A

1.2 Computational Plasma Physics I

Monday 9:45 Room: Seminole A/B

Session Chair: John Luginsland

09:45 - 1A1 - Fractional models in solving Maxwell equations and applications

Lay Kee Ang¹, Yee Sin ANG¹, Muhammad Zubair²

1. Singapore University of Technology and Design

2. Information Technology University, Pakistan

10:00 - 1A2 - (invited) Consistent BGK model for high energy density plasma mixtures

Jeffrey Haack¹, Cory Hauck², Kristian Beckwith³, Michael Murillo⁴

1. Los Alamos National Laboratory

2. Oak Ridge National Laboratory

3. Sandia National Laboratories

4. Michigan State University

10:30 - 1A3 - Thermodiffusion of plasma mixtures from molecular dynamics simulations

Abdourahmane Diaw¹

1. Los Alamos National Lab

10:45 - 1A4 - Speed-limited Particle-in-cell for Fast Simulation of Slow-plasma Problems

Andrew Chap¹, Thomas Jenkins¹, Greg Werner², John Cary¹

1. Tech-X Corporation

2. University of Colorado

11:00 - 1A5 - Transition of low-temperature plasma similarity laws from low to high ionization degree regimes

Yangyang Fu¹, Janez Krek², Deqi Wen¹, Peng Zhang¹, John Verboncoeur¹

1. Michigan State University

2. Michigan State University, CMSE

11:15 - 1A6 - Full-Wave Simulations Of A Combined Plasma Impedance Probe - Plasma Wave Receiver System For Plasma Measurements In The Ionosphere.

Edmund Spencer¹, Robert Arslanbekov², Vladimir Kolobov, Christopher Burns¹

1. University of South Alabama

2. CFDR Corporation

11:30 - 1A7 - Numerical study of a coaxial electron sheath

Andrew Fierro¹, Benjamin Yee¹, Matthew Hopkins¹, Allen Robinson¹, George Laity¹

1. Sandia National Laboratories

Session: 1B

2.5 Codes and Modeling

Monday 9:45 Room: Space Coast I-III

Session Chair: Ian Rittersdorf

09:45 - 1B1 - (invited) THE MICHELLE CODE: LATEST FEATURES AND ADVANCED APPLICATIONS

John Petillo¹, Alex Burke¹, Aaron Jensen¹, Serguei Ovtchinnikov¹, Eric Nelson¹, George Stantchev², Simon Cooke², Kevin Jensen², Ben Held³, Alan Nichols³

1. Leidos Corporation

2. U.S. Naval Research Laboratory

3. National Instruments

10:15 - 1B2 - BROADBAND BOUNDARY MODEL FOR INJECTION AND ABSORPTION OF EM-WAVES WITH THE HIGDON OPERATOR METHOD

Larry Ludeking¹

1. OrbitalATK of NGC

10:30 - 1B3 - Elastostatics in Beam Optics Analyzer

Thuc Bui¹, R. Lawrence Ives¹, David Marsden¹

1. Calabazas Creek Research, Inc.

10:45 - 1B4 - PERFORMANCE PORTABLE FINITE VOLUME MAGNETOHYDRODYNAMICS FOR THE EXASCALE ERA

Forrest Glines¹, Philipp Grete², Brian O'Shea²

1. Sandia National Laboratory

2. Michigan State University

11:00 - 1B5 - Optimization of a Folded Waveguide Traveling Wave Tube Using Impedance Matrices

Aaron Jensen¹, John Petillo¹, Serguei Ovtchinnikov¹, David Chernin¹, Alex Burke¹

1. Leidos

11:15 - 1B6 - Importing CAD-Generated Device Geometry to the Neptune EM-PIC Simulation Code

Simon Cooke¹, George Stantchev¹

1. U.S. Naval Research Laboratory

11:30 - 1B7 - Smart Modelling of Microwave tube using Deep Learning

Nalini Pareek¹, Purushothaman N.¹, Anirban Bera¹

1. CSIR CEERI

Session: 1C

5.1 & 5.2 Opening and Closing Switches I

Monday 9:45 Room: Gold Coast III/IV

Session Chair: Ryan Umstattd

09:45 - 1C1 - Increasing the Pulse Repetition Rate for Solid State Thyatron Replacements

John Waldron¹

1. Silicon Power

10:00 - 1C2 - Design and evaluation of SiC GTO module for pulsed power application

Lei Gao¹, Yinghao Meng¹, Kun Zhou¹

1. Microsystem & Terahertz Research Center, Institute of Electronic Engineering, China Academy of Engineering Physics

10:15 - 1C3 - High sensitivity HEH monitor

Viliam Senaj¹, David Cabrerizo Pastor¹, Thomas Kramer¹

1. CERN

10:30 - 1C4 - Packaging and Evaluation of 100 kV

Photoconductive Switches

Jared Culpepper¹, Adrian Miller¹, Andreas Neuber¹, James Dickens¹
1. Texas Tech University

10:45 - 1C5 - Evaluation methods for electrode erosion under high current, high energy transient arcs

Jiawei Wu¹, Ruoyu Han²

1. *Global Energy Interconnection Development and Cooperation Organization*
2. *Beijing Institute of Technology*

11:00 - 1C6 - Simulation of Post-breakdown Transient Resistance of a Plasma Closing Switch Filled with Air, N₂, CO₂, and an Ar/O₂ mixture

Yuan Yao¹, Igor Timoshkin¹, Scott MacGregor¹, Mark Wilson¹, Martin Given¹, Tao Wang

1. *University of Strathclyde*

11:15 - 1C7 - Experimental study of graphite electrode erosion under premixed atmosphere in spark gap switch

Hongyu Dai¹, Lee Li¹, Shuai Ren¹

1. *Huazhong University of Science and Technology*

Session: 1D

6.5 Biological and Medical Applications I

Monday 9:45 Room: Seminole C

Session Chair: Dayun Yan

09:45 - 1D1 - (invited) Feedback from cells: how cancer cells could make cold atmospheric plasma jet selective during treatment

Li Lin¹, Dayun Yan¹, Michael Keidar¹

1. *The George Washington University*

10:15 - 1D2 - Collective Effects of Nanosecond Pulsed Electric Fields on Cells Organized in a Monolayer

Juergen Kolb¹, Fukun Shi¹, Christina Wolff¹, Anna Steuer¹

1. *Leibniz Institute for Plasma Science and Technology*

10:30 - 1D3 - EVALUATION OF MAGNETIC STIMULATION FOR CELL MEMBRANE PORATION

Qin Hu¹, Ravi Joshi²

1. *Central Michigan University*
2. *Texas Tech University*

10:45 - 1D4 - Cell permeabilization and exogenous molecule delivery via microwave treatment

Evelina Loghin¹, Allen Garner², Travis Crawford², Vasile Neculaes³

1. *GE Global Research*
2. *Purdue University*
3. *GE*

11:00 - 1D5 - Microorganism inactivation with Electric Pulses and Drugs

Agni Dhanabal¹, Anand Vadlamani¹, David Detwiler, Allen Garner¹

1. *Purdue University*

11:15 - 1D6 - Modeling of Fluxes and Surface Coverage of Plasma-Produced Species on Artificial Bone Scaffolding

Juliusz Kruszelnicki¹, Runchu Ma¹, Mark Kushner¹

1. *University of Michigan*

11:30 - 1D7 - Plasma polymerization of N,N-dimethylacrylamide: cell-repellent or cell-adhesive coatings?

Tim Egghe¹, Pieter Cools¹, Joachim Van Guyse¹, Mahtab Asadian¹, Dmitry Khalenkov¹, Anton Nikiforov¹, Heidi Declercq¹, Andre G. Skirtach¹, Rino Morent¹, Richard Hoogenboom¹, Nathalie De Geyter¹
1. Ghent University

Session: 1E

8.5 Power Supplies and Modulators I

Monday 9:45 Room: Seminole D/E

Session Chair: David E. Anderson

09:45 - 1E1 - (invited) Measurements on Combined 12.5/17.5 kV Prototype Inductive Adder for the CLIC DR Kickers

Janne Holma¹, Mike Barnes¹

1. *CERN*

10:15 - 1E2 - (invited) Pulsed Resonant Charging Power Supply for the Spallation Neutron Source Extraction Kicker PFN System

Robert Saethre¹, Ben Morris¹

1. *Oak Ridge National Lab*

10:45 - 1E3 - Controlled Rectifier for Improved Harmonic Performance of a Pulse Step Modulated High Voltage Power Supply

Amit Patel¹

1. *ITER-India, Institute for Plasma Research*

11:00 - 1E4 - A COMPACT SOLID STATE TRIGGER GENERATOR UTILIZING A FERRITE LOADED AIR CORE TRANSFORMER

Joshua Gilbrech¹, Susan Heidger², James Schrock², Jerald Parker¹, ROBERT RICHTER-SAND¹

1. *Leidos*
2. *U.S. Air Force Research Laboratory*

11:15 - 1E5 - Design of Solid-state Marx Modulator with Fast Rising Time and Short Pulse Width

Jung Soo Bae¹, Hyoung Suk Kim², Chan Hun Yu², Kim Shin¹, Sung-Roc Jang²

1. *University of Science & Technology*
2. *KOREA ELECTROTECHNOLOGY RESEARCH INSTITUTE*

11:30 - 1E6 - 100KW PEAK RACKMOUNT MARX WITH DYNAMIC PULSE-TO-PULSE WAVEFORM CONTROL

Kelli Noel¹, Magne Stangenes², Paul Holen², Michael Valbuena², Christopher Yeckel², Sherry Hitchcock²

1. *University of Missouri*
2. *Stangenes Industries*

Session: 1F

10.1/10.2 Converters, Components, Magnetics, Switches and Capacitors

Monday 9:45 Room: Gold Coast I/II

Session Chair: Argenis Bilbao

09:45 - 1F1 - (invited) Study of Cockcroft-Walton Multipliers Driven by AC Sources with Limited Current

Jacob Williams¹, S. D. Kovaleski, Enbo Yang

1. *University of Missouri Electrical Engineering and Computer Science*

10:15 - 1F2 - Characteristic Analysis of Metal Oxide Resistor under Impulse of Different Wave-Head Time

Wei Zhang¹

1. Xi'an Jiaotong University

10:30 - 1F3 - Analysis of Commercial off-the-shelf 1200 V Silicon Carbide MOSFETs Under Short Circuit Conditions

Jonathan Forbes¹, Fernando Salcedo¹, Cedrick Tchoupe-Nono², Stephen Bayne²

1. Texas Tech University

2. Texas Tech University Center for Pulsed Power and Power Electronics

10:45 - 1F4 - The Current State of Custom Pulse Power Cores Supplied by Metglas Inc.

Eric Theisen¹, John Webb¹

1. Metglas

11:00 - 1F5 - Transient Loading of Ultracapacitors

Charles Nybeck¹, David Wetz¹, David Dodson¹, Alexander Johnston¹, John Heinzl², Joshua Ruddy¹

1. University of Texas at Arlington

2. Naval Surface Warfare Center - Philadelphia Division

11:15 - 1F6 - Investigation into the Reliability of Commercial 1.2-kV SiC MPS Diodes under Surge Current and Avalanche Events

Fernando Salcedo, Jonathan Forbes, Stephen Bayne, Ranbir Singh

Monday PM

Session: 1P

Posters Fundamental Research and Basic Processes and Power Electronics

Monday 13:00 Room: Universal Center

Session Chair: Emily Schrock and John Luginsland

1P01 - Modeling electrical discharge tube using Comsol Multiphysics: Diamond-like Carbon (DLC) thin films

Arezou Zarei¹, Masoud Alimohamadi²

1. Department of physics, Shahrood University of technology, Semnan, Iran

2. Department of physics, Farhangian University, Tehran, Iran

1P02 - Implications of surface roughness on microscale gas breakdown theory

Jacqueline Malayter¹, Russell Brayfield¹, Amanda Loveless¹, Allen Garner¹

1. Purdue University

1P03 - Phase mixing and collisionless dissipation at the boundary sheath of magnetized low temperature plasmas

Dennis Krüger¹, Ralf Peter Brinkmann¹

1. Ruhr University Bochum, Germany

1P04 - RF Gas Breakdown Theory and Experiment as a Function of Gas, Gap Size, Frequency, and Pressure

Amanda Loveless¹, Zach Vander Missen¹, Abbas Semnani¹, Allen Garner¹

1. Purdue University

1P05 - MODELING ELECTRODE CONFIGURATIONS FOR NANOSECOND PULSED PLASMAS

Nancy Isner¹, Tugba Piskin¹, Jonathan Poggie¹, Tatyana Sizyuk¹, Carlo

Scalo¹, Allen Garner¹

1. Purdue University

1P06 - Atomistic Study of Polarization response in Functionalized Barium Titanate Nanoparticles

Jessica Dyer¹, Todd Monson¹, Tyler Stevens¹, Renee Van Ginhoven²

1. Sandia National Laboratories

2. Air Force Research Lab

1P07 - Density rise away from the antenna in a helicon plasma source following resonance cone absorption in a diverging axial magnetic field

Arun Pandey¹, Mainak Bandyopadhyay², Arun Chakraborty²

1. Institute for Plasma Research

2. ITER-India, Institute for Plasma Research

1P08 - Investigation of Electron Emission Characteristics of Multi-finger Ferroelectric Trigger Source for Pseudospark Switch

Udit Narayan Pal¹, Mohit Kumar Verma², B. L. Meena³, Varun⁴, Ajeet Kumar Dhakar⁵

1. CSIR-Central Electronics Engineering Research Institute, Pilani, India

2. Electrical Engineering Department, National Institute of Technology (NIT), Calicut-673601, India

3. Microwave Devices Area, CSIR- Central Electronics Engineering Research Institute (CEERI), Pilani, Rajasthan-333031, India

4. CSIR- CEERI, Pilani, India and AcSIR, Ghaziabad, India

5. Cyber Physical System Area, CSIR- Central Electronics Engineering Research Institute (CEERI), Pilani, Rajasthan-333031, India

1P09 - Electron emission in liquids

Sarah Lang¹, Allen Garner¹

1. Purdue University

1P10 - Unification of thermionic, field and space charge limited emission

Sarah Lang¹, Allen Garner¹, Adam Darr¹

1. Purdue University

1P11 - Investigating transport properties of collisionless magnetized plasmas in pulsed power systems via high-order kinetic simulations

Genia Vogman¹, James Hammer¹, William Farmer¹

1. Lawrence Livermore National Laboratory

1P12 - Quantifying Streamer Dynamics for Azimuthally Swept 3D Wedges in Pin-to-Plane PIC-DSMC Simulations

Ashish Jindal¹, Chris Moore¹, Andrew Fierro¹, Matthew Hopkins¹

1. Sandia National Laboratories

1P13 - DIELECTRIC-DIRECTED SURFACE FLASHOVER UNDER ATMOSPHERIC CONDITIONS

Paul Clem¹, Chris Moore¹, Laura Biedermann¹

1. Sandia National Laboratories

1P14 - Effects of polarization force on nonlinear structures in a charge varying dusty plasma

YASHIKA GHAI¹, N.S. Saini¹

1. Guru Nanak Dev University

1P15 - Determination of First Townsend Ionization Coefficient by Simulation

Nathan Crossette¹, Thomas Jenkins¹, John Cary¹, Jarrod Leddy¹, David Smithe¹

1. Tech-X Corporation

1P16 - Investigation of Electron Emission using Molecular Dynamics Simulations

Amanda Loveless¹, Kristinn Torfason², Ágúst Valfells², Allen Garner¹

1. Purdue University

2. Reykjavik University

1P17 - Spontaneous density variations observed in steady-state plasmas sustained using focused microwaves.

Remington Reid¹, Adrian Lopez¹

1P18 - To control the angular momentum of trapped electrons in tapered foam target

Sheetal Punia¹, Manish Dwivedi¹, Hitendra kumar Malik¹

1. Indian Institute of Technology Delhi

1P19 - Stimulated Raman scattering of the multi-Gaussian beam in a relativistic plasma

Manish Dwivedi¹, RAJAT DHAWAN¹, Hitendra Kumar Malik¹

1. Indian Institute of Technology Delhi, India

1P20 - Analysis of sheath formation and charged species density in collisional electronegative warm plasma

Rajat Dhawan¹, Sheetal Punia¹, Hitendra Kumar Malik¹

1. Indian Institute of Technology Delhi, India

1P21 - Submicroscale Gas Breakdown as a Function of Cathode Protrusions

Russell Brayfield¹, Andrew Fairbanks¹, Amanda Loveless¹, Weihang Li¹, Catherine Darr¹, Allen Garner¹

1. Purdue University

1P22 - Impulsive Flashover Across Solid/Gas Interfaces: Breakdown Characteristics and the Path of Spark Channels

Martin Given, Mark Wilson, Scott MacGregor, Zhe Wang, Igor Timoshkin

1P23 - Remote plasma assisted graphene growth for designing graphene/Si hetero-interfaces

Rohit Medwal¹, Charmine Tay², Joseph Vimal Vas³, Mayank Mishra⁴, Rajdeep Rawat

1. Nanyang Technological University

2. Temasek Junior College, Singapore 469278

3. Natural Sciences and Science Education, National Institute of Education, Nanyang Technological University

4. National Institute of Education, Nanyang Technological University, Singapore 637616

1P24 - DESIGN, BUILD, AND TEST OF A LOW COST 3D PRINTED SPECTROMETER FOR EXPLOSIVE COPPER AND CONDUCTIVE POLYMER WIRE EXPERIMENTS

Antonio Breno de Alleluia¹, Mark D Johnston², Edl Schamilogly¹

1. The University of New Mexico

2. Sandia National Laboratories

1P25 - Dielectric Elastomers: An Investigation in Strain Dependent Electrostatic Pressure of Soft Compliant Dielectrics

Barnard Onyenucheya, James Allen, Jennifer Zirnheld, Kevin Burke

1P26 - Catalytic and Acoustic Nano/Micromotors

Aysegul Uygun Oksuz¹, Gamze Celik Cogal², Gozde Yurdabak Karaca³,

Emre Uygun⁴, Lutfi Oksuz⁵

1. Suleyman Demirel University, Chemistry & Bioengineering Department

2. Suleyman Demirel University, Chemistry Department

3. Suleyman Demirel University, Bioengineering Department

4. Suleyman Demirel University, Civil Engineering Department

5. Suleyman Demirel University, Physics Department

1P27 - Calculation of electron-impact ionization cross sections of dichlorodifluoromethane (R12) and tetrafluoroethane (R134) molecules using Deutsch-Märk (DM) and Binary-Encounter-Bethe (BEB) methods

Feng Tang¹, Xiong Jiayu², Zhang Boya², Lv Qishen¹, Li Xingwen²

1. Shenzhen Power Supply Bureau Co., Ltd.

2. State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University

1P28 - Two-dimensional Numerical Simulation of Nanosecond

Pulsed Discharge in Sulfur Hexafluoride gas at High Pressure

wang haiyang¹

1. Northwest institute of nuclear technology

1P29 - NUMERICAL SIMULATION OF CORONA DISCHARGE IN NEEDLE ELECTRODE CONFIGURATION IN A LARGE-SCALE SPACE

Liu Zhi¹, Li Chuan¹, Wang Pengyu¹, Zhang Ming¹

1. HUST

1P30 - Progress Porting VPIC to Several Modern Architectures

William Nystrom¹, Robert Bird¹, Luis Chacon¹, Guangye Chen¹, William Daughton¹, Patrick Kilian¹, Ari Le¹, Scott Luedtke¹, Adam Stanier¹, David Stark¹, Lin Yin¹, Brian Albright¹

1. Los Alamos National Laboratory

1P31 - Speed-Limited Particle-in-Cell Modeling of Low-Temperature Plasma Discharges

Tom Jenkins¹, Andrew Chap¹, Greg Werner², John Cary³

1. Tech-X Corporation

2. University of Colorado

3. Tech-X Corporation and University of Colorado

1P32 - Simplified Radiation Model for Atmospheric Plasmas

Michael Mallon¹, Marina Kühn-Kauffeldt¹, Jose-Luis Marques-Lopez, Jochen Schein

1. University of the Bundeswehr Munich

1P33 - Advanced optimization and machine learning for magnetron design

Anton Spirkin¹, Peter H. Stoltz¹, John W. Luginsland²

1. Tech-X Corporation

2. Confluent Sciences

1P34 - A Dey-Mittra-conforming Poisson Solver for Nanoscale Vacuum Channel Transistor Applications

Gregory Werner¹, John Cary¹

1. University of Colorado

1P35 - MODELING POWER-FLOW USING THE PERSEUS/FLEXO AND HYDRA MHD SIMULATION CODES

Nathaniel Hamlin¹, Mark Hess¹, Charles Seyler²

1. Sandia National Laboratories

2. Cornell University

1P36 - Fractal features of Ag-DLC films based on two morphological images

Azizollah Shafikhani¹, Arezou Zarei²

1. 1- Physics department, Alzahra University; 2-School of Physics, Institute for research in fundamental sciences (IPM)

2. Physics department, Alzahra University

1P37 - Diode Design For Increased Radiation Dose in HERMES III Far-Field

Troy Powell¹, Andy Biller¹, Keith Cartwright¹, Timothy Renk¹, Timothy Poinon¹

1. Sandia National Laboratories

1P38 - Thermodynamic properties and transport coefficients of C4F7N/CO2 thermal plasma as an alternative to SF6

Lisong Zhang, Mingtian Ye, Lei Pang, Qiaogen Zhang

1P39 - A High Order Convected Scheme Solution of the Wigner-Poisson System

Matthew Link¹, Michael S. Murillo¹, Andrew Christlieb¹, Frank Graziani², Mark Sherlock²

1. Michigan State University

2. Lawrence Livermore National Lab

1P40 - Data storage of particle-in-cell simulations for big data analysis of capacitively coupled plasma reactors

Yeon Jung Kim¹, Jin Seok Kim¹, Hae June Lee¹

1. Pusan National University

1P41 - A Fluid Solver approach via Discontinuous Galerkin Methods to Viscoelastic Models for dense plasmas

PIERSON GUTHREY¹, MICHAEL MURILLO¹, Andrew CHRISTLIEB¹

1. MICHIGAN STATE UNIVERSITY

1P42 - Momentum Coupling in Magnetized Plasmas

David COOKE¹, Remington REID¹, James Patton¹, Ashley Stiles²

1. Air Force Research Lab

2. Assurance Tech Corp

1P43 - Experimental Investigation of Colliding Plasma Flows

Andrew Hamilton¹, Vladimir Sotnikov

1. Air Force Research Laboratory

1P44 - Characteristics of nonlinear structures in a multicomponent superthermal plasma with electron beam

SUNIDHI SINGLA¹, YASHIKA GHAI¹, N.S. SAINI¹

1. GURU NANAK DEV UNIVERSITY, AMRITSAR

1P45 - Laboratory Simulations of Solar Wind Interactions with Airless Bodies: Magnetic Anomalies and Wakes

Tobin Munsat¹, LiHsia Yeo¹, Xu Wang¹

1. University of Colorado

1P46 - Numerical simulation of a spark channel expansion in water and its comparison with an experimental result

Vitaliy Stelmashuk¹, Petr Hoffer¹, Karel Kolacek¹, Jaroslav Štraus¹

1. Institute of Plasma Physics of Czech Academy of Sciences

1P47 - Electron heating mode transitions in a capacitively coupled oxygen discharge

Jon Tomas Gudmundsson¹, Andrea Proto¹

1. University of Iceland

1P48 - Ion collection characteristics from a pulsed laser-induced barium plasma with an injection of thermal electrons

Jian Chen¹, Jing Li¹, HEPING LI¹

1. Tsinghua University

1P49 - NANOSECOND DISCHARGE IN AIR IN “NEEDLE – ELECTROLYTE” SYSTEM

Vasyl Chyhin¹

1. Vasyi

1P50 - Study of Ion-Temperature Effects On a Collisional Magnetized Dusty Plasma Sheath Using Fluid Simulation Method

Shesaraj Bhandari¹

1. Central Department Of Physics

1P51 - Analogue of chemical potential of Coulomb dust balls in neon cryogenic plasma

Dmitry Polyakov¹, Valeria Shumova¹, Leonid Vasilyak¹

1. Joint Institute for High Temperatures of the Russian Academy of Sciences

1P52 - Phase transitions in cryogenic dusty plasma in neon

Valeria Shumova¹, Dmitry Polyakov¹, Leonid Vasilyak¹

1. Joint Institute for High Temperatures of the Russian Academy of Sciences

1P53 - Collision of shock waves in a non-Maxwellian strongly coupled dusty plasma

Papihra Sethi¹, N. S. Saini¹

1. Guru Nanak Dev University, Amritsar

1P54 - Study Of Dust Kinetic Alfvén Periodic Waves In Nonextensive Plasmas

RUPINDER KAUR¹, N.S. Saini¹, kuldeep singh singh¹

1. GURU NANAK DEV UNIVERSITY, AMRITSAR

1P55 - Pulsed power-induced CO2 dissociation for CO production

Wilfred Hoebe¹, Tom Huiskamp, Guus Pemen¹

1. Eindhoven University of Technology

1P56 - Modeling of the Plasma Chemistry in an Electron Beam Induced Discharge

Tzvetelina Petrova¹, John Giuliani¹, Stephen Swanekamp¹, Steve

Richardson¹, Stuart Jackson¹, Paul Adamson¹, Joseph Schumer¹

1. Naval Research Laboratory

1P57 - Generation of carbon monoxide from carbon dioxide using nanosecond pulsed discharge

Tatsuya Ichiki¹, Asuki Iwasaki¹, Douyan Wang², Takao Namihiro²

1. Graduate School of Science and Technology, Kumamoto University

2. Institute of Pulsed Power Science, Kumamoto University

1P58 - Impact of gas-chemistry model accuracy on modeling intense electron beam driven plasma

Paul Adamson¹, Steve Richardson¹, Tzvetelina Petrova¹, Stephen

Swanekamp¹, John Giuliani¹, Stuart Jackson¹, David Hinshelwood¹, Joseph Schumer¹

1. Naval Research Laboratory

1P59 - CHARACTERISTICS AND PARAMETERS OF PLASMA OF MERCURY FREE UV-VUF RADIATORS ON RADICALS OF HYDROXYL (OH) WITH PUMPING BY NANOSECOND CAPACITIVE AND BARRIER DISCHARGES

Vasyl Chyhin

1P60 - DETAILED GAS ANALYSIS IN NANO SECOND PULSED NON-EQUILIBRIUM PLASMA PROCESSING OF HYDROCARBONS FOR MASS BALANCE

Shariful Islam Bhuiyan¹, Kungpeng Wang¹, Christopher Campbell¹,

Abdullah Hil Baky¹, David A. Staack¹

1. Texas A&M university

1P61 - Effects of non-Maxwellian electron energy distribution function on plasma chemistry in CL₂ and CF₄

Xifeng Wang¹, Alexander Khrabrov², Igor Kaganovich²

1. University of Michigan

2. Princeton Plasma Physics Laboratory

1P62 - Synthesis and material characterization of silver nanofluids produced through laser ablation in liquids

Rizbi Hasan¹, Magesh Rajan¹

1. South Dakota School of Mines and Technology

1P63 - Spectroscopic investigation of air excited and ionized by an electron beam

S. L. Jackson¹, D. D. Hinshelwood¹, S. B. Swanekamp¹, Tz. B. Petrova¹, J.

L. Giuliani¹, A. S. Richardson¹, P. E. Adamson¹, J. W. Schumer¹

1. Plasma Physics Division, Naval Research Laboratory

1P64 - Relativistic Hermite-cosine-Gaussian laser beam self-focusing in the collisional plasmas

Masoud Alimohamadi¹, Arezou Zarei²

1. Department of Physics, Frahangian University, Tehran, Iran

2. Department of Physics, Sahrood University of Technology, shahrood, Iran

1P65 - Development of a plasma source to accommodate an LIF dip measurement system

John Foster¹, Christopher Durot¹, Jenny Smith¹

1. University of Michigan

1P66 - What different effects can be taken by different liquid-dissolved gases on the concentration of aqueous RONS?

YING YANG¹, LanLan Nie¹, XinPei Lu¹

1. Huazhong University of Science and Technology

1P67 - Design of High-Voltage Pulse Generator Control System for CSNS Linac RF System

Maliang Wan¹, Wenzhong Zhou¹, Zhencheng Mu¹, Jian Li², Xinan Xu², Meifei Liu¹, Bo Wang¹, Linyan Rong¹, Zhixin Xie¹, Zonghua Zhang², Jimin Qiao²

1. Dongguan Branch, Institute of High Energy Physics, Chinese Academy of Sciences

2. Institute of High Energy Physics, Chinese Academy of Sciences

1P68 - Compact Rapid Capacitor Charger for Mobile Marx Generator Applications

Argenis Bilbao¹, Stephen Bayne¹

1. U.S. Army Research Laboratory

1P69 - A Compact 100 kW high-voltage power supply with balanced bipolar output

Jordan Chaparro¹, Kevin Lawson², Matthew McQuage³

1. Naval Surface Warfare Center

2. Booz Allen Hamilton

3. NSWCCD

1P70 - An energy adder circuit for hybrid energy harvesting system

Andréa Villarim¹, Cleonilson Protasio

1. Federal University of Paraíba - Brazil

1P71 - Ablation and Breakdown Characteristics of High Current Gas Spark Switch with Different Profiles

Yu Wang, Yongmin Zhang, Aici Qiu, Yong Lu, Qiaojue Liu

1P72 - Measurement of Diode Reverse Recovery Losses as a Function of Switching Frequency

David Wetz¹, Christopher Martinez¹, Jacob Sanchez¹, Joshua Ruddy¹

1. University of Texas at Arlington

1P73 - High Rate Charge and Discharge of High Voltage Capacitors

Christopher Martinez¹, David Wetz¹, Jacob Sanchez¹, Joshua Ruddy¹

1. University of Texas at Arlington

1P74 - Skin effect in coaxial conductors of pulse facilities

Boris Fridman¹, Maxim Medvedev¹

1. Efremov Institute of Electrophysical Apparatus

1P75 - Multi-pulse performance of amorphous metal magnetic cores at high magnetization rates

Daisy Acosta-Lech¹, Timothy Lee Houck¹, Michael K. Misch², Koby Sugihara²

1. Lawrence Livermore National Laboratory

2. Mission Support and Test Services

1P76 - Compatibility of SLA and FDM printed components with common insulating oils

Casey Ottesen¹, Haylie Orozco¹, Elisha Converse², Brad Hoff³, Steven

Hayden², Sabrina Maestas³, Craig Kief¹

1. COSMIAC at University of New Mexico

2. Aramco Research Center - Boston, Aramco Services Company

3. Air Force Research Laboratory

1P77 - Optimization of L-band waveguide circulators for a broad bandwidth and high transmission operation

Kaviya Aranganadin¹, Ming-Chieh Lin¹, Hua-Yi Hsu²

1. Hanyang University

2. National Taipei University of Technology

1P78 - Study on Pulse Characteristics of GaN HEMTs

Dong Wei Gang¹

1. Fudan University

1P79 - An Eigenvalue Approach to Study SPIDER RF Oscillator Operating Space

Ferdinando Gasparini¹, Mauro Recchia¹, Marco Bigi¹, Alberto Maistrello¹, Andrea Zamengo¹, Elena Gaio¹

1. Consorzio RFX (CNR, ENEA, INFN, Università di Padova, Acciaierie Venete Spa), Corso Stati Uniti, 4, Padova, Italy

1P80 - OUTPUT CHARACTERISTICS OF HORN ANTENNAS IN TRANSIENT REGIME

Jing-Shyang Yen¹, Xuan-De Huang², Chia-Wei Lin², Kaviya Aranganadin³, Chii-Ruey Lin⁴, Jwo-Shiun Sun¹, Hua-Yi Hsu², Ming-Chieh Lin³

1. Department of Electronic Engineering, National Taipei University of Technology

2. Department of Mechanical Engineering, National Taipei University

3. Department of Electrical and Biomedical Engineering, Hanyang University

4. Department of Mechanical Engineering, Minghsin University of Science and Technology

1P81 - E-band Power Combining Experiment for High Power Millimeter Waves

Ahmed Elfgrani¹, Firas Ayoub¹, Marios Patriotis¹, Edl Schamiloglu¹

1. University of New Mexico

1P82 - High Power Ćuk Converter for Fusion Science Applications

Alex Henson¹, Tim Ziemba, James Prager¹, Kenneth E. Miller¹, Satbeer Singh¹

1. Eagle Harbor Technologies, Inc.

1P83 - Investigation of laser-excited nonlinear modes in an under dense plasma using 2D simulation code

Amenah Kargarian

1P84 - Plasma water treatment and oxidation of organic matter in water

Kamau Wright¹

1. University of Hartford

Session: 2Plenary

Plenary Mon PM - Manfred Thumm (2018 NPSS Merit Award)

Monday 14:30 Room: Seminole Ballroom

Session Chair: Edl Schamiloglu

The Wendelstein 7-X Stellarator: Plasma Generation, Heating and Current-Drive with the Worldwide Largest Electron Cyclotron Heating Facility

Manfred Thumm¹, on behalf of the W7-X Team²

1. Karlsruhe Institute of Technology, IHM

2. Max-Planck-Institute for Plasma Physics

Session: 2A

1.3 Space Plasmas

Monday 16:00 Room: Gold Coast I/II

Session Chair: David Cooke

16:00 - 2A1 - Parametric Interaction of VLF and ELF Waves and Impact on Energetic Electrons in a Radiation Belt

Vladimir Sotnikov¹

1. Air Force Research Laboratory

16:15 - 2A2 - Modulational instability and study of freak waves in an ion beam plasma with two temperature superthermal electrons

Nimardeep Kaur¹, Kuldeep Singh¹, N.S. Saini¹

1. Guru Nanak Dev University

16:30 - 2A3 - SOLAR WIND DRIVEN WHISTLER INSTABILITY IN EARTH'S CUSP REGION

M N S Qureshi¹

1. GC University, Lahore

16:45 - 2A4 - Low energy electron irradiation induced charging of dielectric materials: measurements and analyses.

Mohamed Belhaj¹, Sarah Dadouch¹

1. ONERA

17:00 - 2A5 - Modeling DSX Plasma Interactions Using Nascap-2k

Myron Mandell¹, david cooke², James McCollough², William Johnston², Adrian Wheelock², Dale Ferguson², Victoria Davis¹

1. Leidos

2. US Air Force Research Lab

Session: 2B

3.1 Plasma, Ion, and Electron Sources I

Monday 16:00 Room: Seminole D/E

Session Chair: John Harris

16:00 - 2B1 - Transients on Arc and Converter currents in the Multicusp Cesium Surface Conversion H - Source at LANSCE

David Kleinjan¹

1. Los Alamos National Laboratory

16:15 - 2B2 - Atmospheric Pressure Breakdown and Evidence for Field Emission in GHz Split-Ring Resonators

Zane Cohick¹, Michael Lanagan¹, Douglas Wolfe¹, Benjamin Hall²

1. The Pennsylvania State University

2. Lasers for Innovative Solutions

16:30 - 2B3 - Experimental, analytical and computational studies of electron gun grid heating

Andrew Cross¹, Kristopher Frutschy¹, Allen Garner², Vasile Neculaes³

1. GE Global Research

2. Purdue University

3. GE

16:45 - 2B4 - Generation of deuterium ions in a vacuum arc and in a glow discharge with a hollow cathode

Valeria Frolova¹, Alexey Nikolaev², Efim Oks¹, Alexey Vizir², Georgy Yushkov²

1. Tomsk State University of Control Systems and Radioelectronics

2. High Current Electronics Institute, Tomsk, Russia

17:00 - 2B5 - Power Consumption in a Miniature Microwave Inductively Coupled Plasma Source

Ilija Stefanović¹, Michael Klute¹, Ralf-Peter Brinkmann², Nikita Bibinov¹,

Wolfgang Heinrich³, Horia-Eugen Porteanu³, Peter Awakowicz⁴

1. Ruhr-University Bochum

2. Ruhr-Universität Bochum, Faculty of Electrical Engineering and Information Technology, Institute for Theoretical Electrical Engineering, Germany

3. Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik, Berlin, Germany

4. Ruhr-Universität Bochum, Faculty of Electrical Engineering and Information Technology, Institute for Electrical Engineering and Plasma Technology, Germany

17:15 - 2B6 - Test beds for electron emission studies

Michel CARON¹, Martial Toury¹, Laurent Hourdin¹, Remi Nicolas¹,

Bertrand Etchessahar¹, Rodolphe Rosol¹, Jerome Magnan¹, Remi Maisony¹

1. CEA

Session: 2C

5.2 & 5.3 Transmission Lines and Transformers and High Energy Density Storage

Monday 16:00 Room: Gold Coast III/IV

Session Chair: Joel Ennis and Jose Rossi

16:00 - 2C1 - Development of a 1MW pulsed air core electromagnetic toroidal coupler for wireless power transmission with reduced stray emission

Fatima Zahra Boudara¹, Marc Rivaletto², Laurent Pecastaing¹, Antoine Silvestre De Ferron¹, Jean-pierre Brasile³, Sylvain Paquet³

1. Laboratory SIAME

2. Pau University

3. Effitech

16:15 - 2C2 - Assessing Effective Medium Theories for Designing Composites for Nonlinear Transmission Lines

Xiaojun Zhu¹, Andrew J. Fairbanks¹, Allen L. Garner¹

1. Purdue University

16:30 - 2C3 - Development and Diagnostics on Composites for Nonlinear Transmission Lines

Andrew Fairbanks¹, Xiaojun Zhu¹, Julio Hernandez¹, Shengjie Gao¹, Wenzhou Wu¹, Tyler Tallman¹, Allen Garner¹

1. Purdue University

16:45 - 2C4 - DESIGN AND TESTING OF A COMPACT 40 KV CAPACITOR BASED ON NANODIELECTRIC COMPOSITES

Kevin O'Connor¹, Robert Kutz¹, Milton Miranda¹, Mark Prelas², Randy Curry³

1. NanoElectromagnetics, LLC

2. University of Missouri Center for Physical and Power Electronics

3. University of Missouri

17:00 - 2C5 - Application of Propylene Carbonate-Based Nano-Fluid in Pulse Forming Line

Zicheng Zhang¹, Yanpan Hou¹, Shifei Liu¹, Hanwu Yang¹, Jiande Zhang¹, Baoling Qian¹

1. National University of Defense Technology, China

17:15 - 2C6 - High Current Density Pulse Transmission Experiments with Different Conductor Materials on the Primary Test Stand

Wenkang Zou¹, Guilin Wang¹, Bin Wei¹

1. Institute of Fluid Physics, China Academy of Engineering Physics

Session: 2D

6.4/6.5 Environmental, Biological, and Medical Applications

Monday 16:00 Room: Seminole C

Session Chair: Katharina Stapelmann

16:00 - 2D1 - (invited) On the VUV optical emission of N-APPJs

XinPei Lu¹, FengWu Liu¹, Nie LanLan¹

1. *Huazhong University of Science and Technology*

16:30 - 2D2 - A Bipolar High Voltage Pulse Generator Used for Irreversible Electroporation Ablation

Lanxi Li¹, Weidong Ding¹, Jiaqi Yan¹, Saikang Shen¹, Yanan Wang¹, Jiayin Yan¹, Yinan Zhu, Zheng Zhongbo¹, Chongjian Ge¹

1. *Xi'an Jiaotong University*

16:45 - 2D3 - A Bipolar Nanosecond Pulse Generator with High Repetition Frequency Used for Irreversible Electroporation

Saikang Shen, Jiaqi Yan¹, Lanxi Li¹, Weidong Ding¹

1. *Xi'an Jiaotong University*

17:00 - 2D4 - Downstreaming of valuable compounds from microalgae with spark discharges, instigated by 100-ns high voltage pulses

Katja Zocher¹, Raphael Rataj, Anna Steuer¹, Juergen Kolb¹

1. *Leibniz Institute for Plasma Science and Technology*

17:15 - 2D5 - A MULTILAYER STRUCTURE OF COMPRESSED WATER FLOW GENERATED BY RE-STRIKE IN UNDERWATER ELECTRICAL WIRE EXPLOSION

Huantong Shi¹, Guofeng YIN¹, Yuanfei FAN¹, Jian WU¹, Xingwen LI¹

1. *Xi'an Jiaotong University*

Session: 2E

7.1 Explosive Power Generators

Monday 16:00 Room: Space Coast I-III

Session Chair: Bucur Novac

16:00 - 2E1 - (invited) Pulse Compression Considerations for High Current Ranchero Generators

Timothy Foley¹, Thomas Gianakon¹, Christopher Rousculp¹, Robert Watt¹, James Goforth¹

1. *Los Alamos National Lab*

16:30 - 2E2 - 3D Magneto-Hydrodynamic Modelling of an Overstressed Helical Magnetic Flux Compression Generator

Anthony Johnson¹, Andrew Young¹, Adam White¹, Jalal Javedani¹, Roger Richardson¹, Jerome Solberg¹

1. *Lawrence Livermore National Laboratory*

16:45 - 2E3 - Design and simulation of compact explosively-driven magnetic flux compression (MFC) generators for high energy applications.

George Vunni¹, Paul Berning¹, Peter Bartkowski¹

1. *US Army Research Laboratory*

17:00 - 2E4 - A 2-D Numerical Model for the Estimation of the Time Varying Inductance of an Explosively-Driven Helical Flux Compression Generator

Ashish Sharma¹, Joy Thomas Meledath¹

1. *Indian Institute of Science*

17:15 - 2E5 - Ignition Mechanisms of Polymer Bonded Explosives during Drilling

Raimi Clark¹, Ryan Lee¹, Austin Hewitt¹, Tyler Buntin², David Barnett², James Dickens², W. A. Harrison³, E. Tucker⁴, John Mankowski², Andreas Neuber²

1. *Center for Pulsed Power and Power Electronics (P3E)*

2. *Texas Tech University*

3. *CNS Pantex*

4. *Mission Engineering Development Group*

Session: 2F

9.1 Optical, X-ray, FIR, and Microwave

Diagnostics and 9.3 Pulsed Power Diagnostics

Monday 16:00 Room: Seminole A/B

Session Chair: Clayton Myers

16:00 - 2F1 - Hyperfine structure and isotopic shift analysis of uranium transitions using LIF of laser-produced plasma

S. S. Harilal¹, E. Kautz¹, B. E. Bernacki¹, M. C. Phillips¹

1. *Pacific Northwest National Laboratory*

16:15 - 2F2 - Propagation process of streamers and time history of reduced electric field during nanosecond pulsed discharge in coaxial electrode in atmospheric air

Terumasa Ryu¹, Hitoshi Yamaguchi, Douyan Wang¹, Takao Namihira¹

1. *Institute of Pulsed Power Science, Kumamoto University*

16:30 - 2F3 - Importance of RF Measurements in Pulsed-Plasma Applications

Stephen Heagy¹

1. *Bird*

16:45 - 2F4 - Influencing Factors and Error Analysis of Pulse Current Measurement With Air-core Rogowski Coil

Yao Xu¹, Xiaobing Zou¹, Xinxin Wang¹

1. *Tsinghua University*

17:00 - 2F5 - A Multi-Material Velocimetry Detector for Pulsed Power Flow Studies

Mark Hess¹, G. Laity, Brian Hutsel¹, Chris Jennings¹, Daniel Dolan¹, Carlos Aragon¹, Kurt Tomlinson², Kyle Peterson¹

1. *Sandia National Laboratories*

2. *General Atomics*

17:15 - 2F6 - Broadband Power Measurements of High-Voltage, 10-ns Pulses for Plasma Ignition for Combustion

Christopher Tremble¹, David Alderman¹, Jason Sanders², Dan Singleton²,

Chunqi Jiang¹

1. *Old Dominion University*

2. *Transient Plasma Systems, Inc.*

Tuesday AM

Session: 3Plenary

Plenary Tues AM - John Verboncoeur (2019

Plasma Science and Applications Award)

Tuesday 8:15 Room: Seminole Ballroom

Session Chair: Joe Schumer (PSAC ExCom Chair)

Session: 3A

4.2 Particle Acceleration with Laser and Beams

Tuesday 9:45 Room: Gold Coast I/II

Session Chair: Jens Osterhoff

09:45 - 3A1 - (invited) Progress of beam driven plasma acceleration at FLASHForward

Lucas Schaper¹, Alexander Aschikin¹, Simon Gerd Bohlen², Gregory Boyle¹, Theresa Karoline Bruemmer¹, Richard D'Arcy¹, Severin Diederichs³, Brian Foster⁴, Matthew James Garland⁵, Lars Goldberg¹, Pau Gonzales Caminal³, Sven Karstensen⁶, Alexander Knetsch¹, Peng Kuang¹, Vladyslav Libov, Carl A. Lindström¹, Kai Ludwig¹, Alberto Martinez de la Ossa¹, Timon Mehrling⁷, Martin Meisel¹, Pardis Niknejadi¹, Jens Osterhoff¹, Kristjan Poder¹, Paul Pourmussavi³, Martin Quast³, Jan-Hedrik Roeckemann¹, Bernhard Schmidt¹, Sarah Schroeder³, Jan-Patrick Schwinkendorf⁸, Bridget Sheeran³, Gabriele Tauscher³, Stephan Wesch¹, Paul Winkler³, Ming Zeng¹

1. DESY

2. Hamburg University (DE)

3. Universitaet Hamburg

4. University of Oxford (GB)

5. CERN

6. DESY Hamburg

7. Lawrence Berkeley National Lab

8. Deutsches Elektronen-Synchrotron DESY

10:15 - 3A2 - Time-dependent behavior of capillary discharge devices for plasma-wakefield acceleration

Gregory Boyle¹, Erik Adli², James Anthony Chappell³, Nathan Cook⁴, Roberto Corsini⁵, Richard D'Arcy¹, Anthony Dyson⁶, Wilfrid Farabolini⁷, Simon Hooker⁶, Carl A. Lindström¹, Martin Meisel¹, Jan-Hedrik Roeckemann¹, Lucas Schaper¹, Kyrre Ness Sjobaek², Matthew Wing⁸, Jens Osterhoff¹

1. DESY

2. University of Oslo (NO)

3. University of London (GB)

4. RadiaSoft LLC

5. CERN

6. University of Oxford

7. Université Paris-Saclay (FR)

8. University College London

10:30 - 3A3 - Proton Driven Plasma Wakefield Acceleration: AWAKE at CERN - Concept, Experiment and Latest Results

Mathias Hüther¹

1. Max-Planck-Institut für Physik (DE)

10:45 - 3A4 - Acceleration of Helical Electron Beams using Light springs

José Tito Mendonça¹

1. IPFN - Instituto Superior Tecnico, Univ. Lisboa, Portugal

11:00 - 3A5 - Study of the effects of laser pulse intensity

modulations on the plasma oscillations and electron energy gain in the bubble regime.

Anatoliy Shaplov¹, Balazs Fekete¹, Matyas Kiss¹, Sandor Szatmari², Sergei Kukhlevsky¹

1. Institute of Physics, University of Pecs

2. Institute of Physics, University of Szeged

11:15 - 3A6 - Experimental demonstration of a laser proton accelerator with accurate beam control through image-relaying transport

Chen Lin¹, Jungao Zhu¹, Minjian Wu¹, Qing Liao¹, Yixing Geng¹, Kun Zhu¹, Chengcai Li¹, Xiaohan Xu¹, Dongyu Li¹, Yinren Shou¹, Tong Yang¹, Pengjie Wang¹, Jiaer Chen¹, Yanying Zhao¹, Wenjun Ma¹, Haiyang Lu¹, Xueqing Yan¹

1. Peking University

11:30 - 3A7 - The effect of an oblique magnetic field on the electron acceleration in a laser-produced ion channel

Ameneh Kargarian¹

1. Plasma physics research Institute

Session: 3B

2.6 Non-Fusion Microwave Systems and 2.7

Microwave Plasma Interaction I

Tuesday 9:45 Room: Seminole D/E

Session Chair: Sarita Prasad and John Leopold

09:45 - 3B1 - Practical Tunable Electrically Small Antenna Design for Transportable Ionospheric Heating

Benedikt Esser¹, James Dickens¹, John Mankowski¹, Andreas Neuber¹

1. Texas Tech University

10:00 - 3B2 - ROLE OF PHOTON PROCESSES IN THE RF BREAKDOWN OF AIR

Xiaoli Qiu¹, Benedikt Esser¹, John Mankowski¹, James Dickens¹, Andreas Neuber¹, Ravi Joshi¹

1. Texas Tech University

10:15 - 3B3 - NUMERICAL EVALUATION OF MULTIPACTOR IN RECTANGULAR WAVEGUIDES PROBED BY THE EVOLUTION OF ELECTRON DISTRIBUTIONS

Hieu Nguyen¹, Xiaoli Qiu¹, John Mankowski¹, James C. Dickens¹, Andreas

A. Neuber¹, Ravi P. Joshi¹

1. Texas Tech University

10:30 - 3B4 - A 2.85 GHZ PULSED RF SOURCE FOR MULTIPACTOR RESEARCH UTILIZING GAN HEMTS CAPABLE OF 2 KW

Benedikt Esser¹, Zachary Shaw¹, James Dickens¹, Andreas Neuber¹

1. Texas Tech University

10:45 - 3B5 - NUMERICAL EVALUATIONS OF ENERGY-DEPENDENT SECONDARY ELECTRON EMISSION BY INCIDENT ELECTRONS AND CHARGED IONS

Hieu Nguyen¹, Xiaoli Qiu¹, Joy Acharjee¹, John Mankowski¹, James C.

Dickens¹, Andreas Neuber¹, Ravindra Joshi¹

1. Texas Tech University

11:00 - 3B6 - Design and Implementation of an Ultra-wideband Multipactor Test Cell

Mirhamed Mirmozafari¹, Sirous Nourgostar¹, Dan Enderich¹, Nader

Behdad¹, John Booske¹

1. University of Wisconsin-Madison

11:15 - 3B7 - (invited) Map-Based Multipactor Theory for Two-Carrier Operation

Moiz Siddiqi¹, Rami Kishek¹

1. *University of Maryland, College Park*

Session: 3C

6.5 Biological and Medical Applications II

Tuesday 9:45 Room: Seminole C

Session Chair: Li Lin

09:45 - 3C1 - The cell activation phenomena in the cold atmospheric plasma cancer treatment

Dayun Yan¹, Wenjun Xu², Li Lin¹, Jonathan Sherman³, Michael Keidar¹

1. *The George Washington University*

2. *State Key Laboratory of Electric Insulation and Power Equipment,*

3. *Neurological Surgery*

10:00 - 3C2 - Mathematical Modeling of Tumor Growth and Response to Electrochemotherapy

Jennifer Firehammer¹, Lakshya Mittal¹, Matthew DeWitt², Raji

Sundararajan¹, Allen Garner¹

1. *Purdue University*

2. *Luna Innovations*

10:15 - 3C3 - Single cell laser mediated molecule delivery – infrared laser based microinjection

Vasile Neculaes¹, Allen Garner², Dylov Dimitry, Loghin Evelina³

1. *GE*

2. *Purdue University*

3. *GE Global Research*

10:30 - 3C4 - Electrochemotherapy Enhances the Curcumin Effect on TNBC Cells in a Dosage and Energy Dependent Manner

Lakshya Mittal¹, Allen Garner¹, Ignacio Camarillo¹, Xinhua Chen, Ravi

Joshi², Raji Sundararajan¹

1. *Purdue University*

2. *Texas Tech University*

10:45 - 3C5 - (invited) THE INFLUENCE OF SURFACE HUMIDITY ON DISINFECTION USING COLD PLASMAS

Ankit Moldgy¹, Gaurav Nayak¹, Hamada Aboubakr², Sagar Goyal², Peter Bruggeman¹

1. *Department of Mechanical Engineering, University of Minnesota*

2. *Veterinary Diagnostic Laboratory, University of Minnesota*

11:15 - 3C6 - Comparison of Plasma Sporicide Using Different Power Sources in Atmospheric-Air

Hao Wang¹, Liyang Zhang¹, Haiyun Luo¹, Xinxin Wang¹

1. *Tsinghua University*

11:30 - 3C7 - A novel device enhanced the active antimicrobial components in the plasma treated solution

Hangbo Xu¹, ruonan Ma

1. *Zhengzhou University*

Session: 3D

7.2 High Current and High Power Pulsers I

Tuesday 9:45 Room: Space Coast I-III

Session Chair: Weihua Jiang

09:45 - 3D1 - (invited) HIGH POWER DIELECTRIC DIODE STUDIES AT SANDIA NATIONAL LABORATORY

MICHAEL MAZARAKIS¹, JONATHAN CUSTER¹, MARK KIEFER¹,

JOSHUA LECKBEE¹, DEL ANDERSON², RAYMOND CIGNAC², TRINH TUNG², FRANK WILKINS², ROBERT OBREGON²

1. *SANDIA NATIONAL LABORATORIES*

2. *NATIONAL SECURITY TECHNOLOGIES*

10:15 - 3D2 - Field-Circuit Coupling Simulation of Petawatt-class Z-Pinch Accelerator

QUAN ZHOU, Xiaobing Zou¹, Xinxin Wang¹

1. *Tsinghua University*

10:30 - 3D3 - Compact Marx Generator to Drive a Low-Impedance MILO

Tyler Buntin¹, James Dickens¹, Andreas Neuber¹, Ravi Joshi¹, John

Mankowski¹, Matthew Abide¹

1. *Texas Tech University*

10:45 - 3D4 - Large Scale System Using Pulsed Electric Fields as an Invasive Fish Barrier

Michael Kempkes¹, Timothy Hawkey¹, Ian Roth¹, Marcel Gaudreau¹

1. *Diversified Technologies, Inc.*

11:00 - 3D5 - Analysis of triggering behaviour of Marx generators by using Spice simulations

Benjamin Lassalle¹

1. *ITHPP*

11:15 - 3D6 - Characterization of Nano-second Pulsed Power Generator Synchronizing Double Inductive Energy Storage Circuits with Semiconductor Opening Switch

Taichi Sugai¹, Kosuke Yawata¹, Yiwen Yang¹, Akira Tokuchi², Weihua

Jiang¹

1. *Nagaoka University of Technology*

2. *Pulsed Power Japan Laboratory Ltd.*

11:30 - 3D7 - MHD Modeling of Shock Physics Experiments with the PHELIX Portable High Magnetic Field Driver

Christopher Rousculp¹, M S Freeman¹, D A Fredenburg, F Fierro, J R

Griego, F G Mariam, J T Bradley, L P Neukirch, D M Oro, A R Patten, R B

Randolph, W A Reass, R E Reinovsky, A Saunders, Z Tang, P J Turchi, J T

Dunwoody, T J Voorhees

1. *Los Alamos National Laboratory*

Session: 3E

6.2 High-Pressure and Thermal Plasma Processing

Tuesday 9:45 Room: Gold Coast III/IV

Session Chair: Paul Rumbach

09:45 - 3E1 - Optical emission behavior of electrical wire explosions in different media

Ruoyu Han¹, Jiawei Wu²

1. *Beijing Institute of Technology*

2. *Global Energy Interconnection Development and Cooperation Organization*

10:00 - 3E2 - Characteristics of negative-polarity DC superimposed nanosecond pulsed discharge and its applications

Hirofumi Yamashita¹, Yasuaki Torigoe¹, Douyan Wang², Takao Namihira²

1. *Graduate School of Science and Technology, Kumamoto University - Japan*

2. *Institute of Pulsed Power Science, Kumamoto University - Japan*

10:15 - 3E3 - Quantification of OH radicals generated by nanosecond pulsed discharge plasma

Kiyotaka Okada¹, Kazuki Oishi¹, Shintaro Kodama¹, Douyan Wang², Takao Namihira²

1. *Graduate School of Science and Technology, Kumamoto University - Japan*

2. *Institute of Pulsed Power Science, Kumamoto University - Japan*

10:30 - 3E4 - Electric discharge destruction of reinforced concrete sleeper in the system of superimposed electrodes.

Evgeniy Petrenko, Igor Protopopov¹, Artem Yudin¹
1. Tomsk Polytechnic University

10:45 - 3E5 - Single-step Synthesis of Molybdenum Carbide Nanoparticles by Wire Explosion Process

Prem Ranjan¹, R. Sarathi¹, Ramkishore Kumar², P. Selvam², R.

Jayaganthan³, H. Suematsu⁴

1. Department of Electrical Engineering, IIT Madras, Chennai, 600036 India

2. Department of Chemistry, IIT Madras, Chennai, 600036 India

3. Department of Engineering Design, IIT Madras, Chennai, 600036 India

4. Extreme Energy-Density Research Institute, Nagaoka University of Technology, Nagaoka 940-2188, Japan

11:00 - 3E6 - DEVELOPMENT OF 3D ELECTROMAGNETIC THERMAL FLUID SIMULATION FOR ELUCIDATION OF MOVEMENT FACTORS IN VACUUM ARC

Soshi Iwata¹, Yusuke Nemoto¹, Ren Zhenwei¹, Yoshifumi Maeda¹, Toru Iwao¹

1. Tokyo City University

11:15 - 3E7 - ANALYSIS OF NITROGEN CONTAMINATION PROCESS INTO ARC AFFECTED BY LATERAL GAS FLOW VELOCITY IN ATMOSPHERIC PRESSURE

Yoshifumi Maeda¹, Toru Iwao¹

1. Tokyo City University

11:30 - 3E8 - Optical and electrical diagnostic of surface arcs

Suryakant Gupta¹, Keena Kalaria¹, Naresh Vaghela¹

1. Institute for plasma research

Session: 3F

1.1 Basic Phenomena I

Tuesday 9:45 Room: Seminole A/B

Session Chair: Ricky Ang

09:45 - 3F1 - (invited) Hot electron emission processes in waveguide integrated graphene

Rehan Kapadia¹, Fatemeh Rezaeifar¹, Ragib Ahsan¹

1. University of Southern California

10:15 - 3F2 - Electron Emission and Gas Breakdown: Unification of Theory from Schrodinger's Equation to Paschen's Law

Amanda Loveless¹, Adam Darr¹, Allen Garner¹

1. Purdue University

10:30 - 3F3 - Microscale Gas breakdown voltage dependence on electrode surface

Russell Brayfield¹, Andrew Fairbanks¹, Amanda Loveless¹, Shengjie Gao¹,

Caleb Darr¹, Jacqueline Malayer¹, Wenzhou Wu¹, Allen Garner¹

1. Purdue University

10:45 - 3F4 - Quantum effects in electron emission from nanodiamond

Stanislav Baturin¹, Oksana Chubenko², Andreas Schroeder³,

Sergey Baryshev⁴

1. PSD Enrico Fermi Institute, University of Chicago

2. Department of Physics, Arizona State University

3. Department of Physics, University of Illinois at Chicago

4. Department of Electrical and Computer Engineering, Michigan State University

11:00 - 3F5 - Particle Emission Investigation from an Anode Liquid Surface of Electrolyte in Atmospheric Pressure DC Glow

Yao Kovach¹, John Foster¹

1. University of Michigan

11:15 - 3F6 - ENGINEERED TUNNELING ELECTRICAL CONTACTS

Sneha Banerjee¹, John Luginsland, Peng Zhang¹

1. Michigan State University

11:30 - 3F7 - A COORDINATE INVARIANT THEORY FOR SPACE CHARGE LIMITED EMISSION USING VARIATIONAL CALCULUS

Adam Darr¹, Allen Garner¹

1. Purdue University, West Lafayette

Tuesday PM

Session: 2P

Poster - Microwave Generation and Plasma Interactions and Pulsed Power Switches and Components

Tuesday 13:00 Room: Universal Center

Session Chair: Jason Sanders, Jose Rossi, Joel Ennis

2P01 - Modeling a compact A6 relativistic magnetron operating with permanent magnets

John Leopold¹, Uri Dai², Yakov Krasik¹

1. Physics Department, Technion, Israel Institute of Technology

2. DDR&D, IMOD

2P02 - Modeling the wakefield excitation by a 28 GHz microwave pulse in a plasma filled waveguide

Y. Cao¹, Y. P. Bliokh¹, J.G. Leopold¹, V. Rostov², Ya. Slutsker¹, Ya.E.

Krasik³

1. Physics Department, Technion, Israel Institute of Technology

2. 2 Institute of High Current Electronics, Russian Academy of Sciences, Tomsk, Russia

3. 1 Physics Department, Technion, Israel Institute of Technology

2P03 - Effects of the Mesh Anode Transparency on the Operation Characteristics of the Virtual Cathode Oscillator

Se-Hoon Kim¹, Chang-Jin Lee¹, Kwang-Cheol Ko¹

1. Hanyang University

2P04 - Particles charge dissipation in Ku-band relativistic HPM source

Antoine Chauloux¹, Jean-Christophe Diot¹, Stéphane Tortel¹

1. CEA - Gramat

2P05 - Fast-Wave and Slow-Wave Interactions in the Rippled-Field Magnetron

Andrey Andreev, Edl Schamiloglu¹, Samuel Smith¹, Ahmed Elfrgani¹,

Dmitrii Andreev¹, Stacie Hernandez¹, Artem Kuskov

1. University of New Mexico

2P06 - Frequency tunable X-band Relativistic Backward Wave Oscillator

Jean-Christophe Diot¹, Antoine Chauloux¹, Jeremy Pothee¹, Thierry

Chanconie¹, Stéphane Tortel¹

1. CEA

2P07 - Examination of stability against beam parameters in a Ku band helix TWT

Necati Haytural, Ferhat Bozduman, Lutfi Oksuz¹

1. Suleyman Demirel University

2P08 - Metamaterial Based RF Source

Rebecca Seviour¹, Simon Foulkes²

1. Supervisor

2. University of Huddersfield

2P09 - Cold Test Validation of Metamaterial Based Rectangular Slow Wave Structure for High Power Backward-Wave Oscillators

Doğancan Eser¹, Şimşek Demir²

1. PhD Student

2. IEEE member

2P10 - Simulation of an Industrial Magnetron Using Cathode Modulation

Andong Yue¹, Jim Browning¹, Mike Worthington², John Cippola²

1. Boise State University

2. L3 Technologies

2P11 - NLTL Frequency Chirp through Dynamic Bias of Inductor Cores

Emily Schrock¹, D. Phillip Coleman¹, Seth Miller¹, John Borchardt¹

1. Sandia National Laboratories

2P12 - The Influence of Magnetic Field Profile on the Downstream Electrons and the Output Mode of MDO

Shen Shou Max Chung¹

1. Department of Electrical Engineering, National Penghu University

2P13 - Hybrid Kinetic-Fluid Simulations of a Ku-band MILO

Peter Stoltz¹, John W. Luginsland², Anton Spirkin¹, Christine Roark

1. Tech-X Corporation

2. Confluent Sciences

2P14 - W-band 2D Periodic Lattice Oscillator

Colin Whyte¹, MacLachlan Amy¹, Robertson Craig¹, Cross Adrian¹, Zhang

Liang¹, Donaldson Craig¹, Phelps Alan¹, Ronald Kevin¹

1. University of Strathclyde

2P15 - Operation of a Gyromagnetic Line with Magnetic Axial Bias

Fernanda Yamasaki¹, Jose Rossi², Elizete Gonçalves Lopes Rangel¹, Edl Schamiloglu³, Leandro Carvalho Silva¹

1. INPE

2. National Institute for Space Research

3. University of New Mexico

2P16 - Simulations of a W-Band Circular TWT

Khandakar Nusrat Islam¹, Edl Schamiloglu¹

1. University of New Mexico

2P17 - Pulsed RF Signal Irradiation Using a Low Voltage NLTL Coupled to a DRG Antenna

Jose O. Rossi¹, Leandro Carvalho Silva², Lucas Reis Raimundi¹, Elizete

Goncalves Lopes Rangel², Edl Schamiloglu³

1. National Institute for Space Research

2. INPE

3. University of New Mexico

2P18 - E-band Overmoded Relativistic Backward Wave Oscillator

Liangjie Bi¹, Ahmed Elfrgani², Edl Schamiloglu²

1. University of New Mexico, University of Electronic Science and Technology of China

2. University of New Mexico

2P19 - 3D ICEPIC SIMULATION OF AN X-BAND RELATIVISTIC TWISTRON

Paul Gensheimer¹, Timothy Fleming¹

1. AFRL/RDH

2P20 - Simulations of Surface Inhomogeneities in Field Emission

Kristinn Torfason¹, Ágúst Valfells¹, Andrei Manolescu¹

1. Reykjavik University

2P21 - Beam-Current Loss in Emittance-Dominated High-Frequency Tubes

Muhammed Zuboraj¹, Bruce Carlsten

1. Los Alamos National Laboratory

2P22 - Confinement of dust balls in neon cryogenic plasma

Valeria Shumova¹, Dmitry Polyakov², Leonid Vasilyak¹

1. Joint Institute for High Temperatures of the Russian Academy of Sciences

2. Joint Institute for High Temperatures of Russian Academy of Sciences

2P24 - Hybrid Quantum-Hydrodynamics/Kinetics Model for Dense Plasma Mixtures

Lucas J. Stanek¹, Kris Beckwith², Jeffrey Haack³, Michael S. Murillo⁴

1. Michigan State University and Sandia National Laboratories

2. Sandia National Laboratories

3. Los Alamos National Laboratory

4. Michigan State University

2P25 - Magneto-hydrodynamic Simulation for Wire Array Underwater Electrical Explosions

Zhigang Liu¹, Dun Qian¹, Xiaobin Zou¹, Xinxin Wang¹

1. Tsinghua University

2P26 - Plasma Simulation and Modeling of Pseudospark Discharge for High Density and Energetic Electron Beam Generation

Varun¹, Prasoon Shukla², Adrian Cross³, Kevin Ronald³, Udit Narayan Pal⁴

1. CSIR- CEERI, Pilani, India and AcSIR, Ghaziabad, India

2. IAcademy of Scientific and Innovative Research, Ghaziabad, U.P.- 201002, India

3. University of Strathclyde

4. CSIR-Central Electronics Engineering Research Institute, Pilani, India

2P27 - PIC-DSMC numerical grid heating in collisional plasmas: Application to streamer discharge simulations

Chris Moore¹, Ashish Jindal¹, Andrew Fierro¹, Keith Cartwright¹, Matthew Hopkins¹

1. Sandia National Laboratories

2P28 - Dispersion Engineering for O and M-Types High Power Microwave Sources

Artem Kuskov¹, Dmitrii Andreev¹, Ahmed Elfrgani¹, Stacie Hernandez¹,

Braulio Martinez-Hernandez¹, Edl Schamiloglu¹

1. University of New Mexico

2P29 - Fast A-Stable Implicit Scheme and Scalable Software MOLTN For Electromagnetics

Mathialakan Thavappiragsam¹, Andrew Christlieb¹, John Luginsland²,

Pierson Guthery¹

1. Michigan State University

2. Confluent Sciences, LLC

2P30 - Electrostatic Finite Element Numerical Modeling of Spark Gap and Related Accelerator Structures

Greg Dale¹, Salvador Portillo², Rena Berdine²

1. Los Alamos National Labs

2. University of New Mexico

2P31 - Modeling of gas recirculation effects in nanosecond-pulsed high-frequency discharges

Steve Adams¹, Jared Miles¹, Asher Straubing², Kristina Lemmer³, Hannah Watts³

1. Air Force Research Laboratory
2. University of Dayton Research Institute
3. Western Michigan University

2P32 - Study of two-surface multipactor susceptibility using Monte Carlo simulation

Zizhuo Huang¹, Peng Zhang¹
 1. Michigan State University

2P33 - High Power Radio Frequency Pulse Shaping For a 1.5MW S Band Magnetron Source

Michael Abdalla¹, Dirk Frew², Nick Myers², Michael Skipper¹, Jane Lehr³, Michael Butcher², Manuel Alan²
 1. ASR Corporation
 2. Verus Research
 3. University of New Mexico

2P34 - Feasibility Study of Guiding High Power Microwave with Laser Created Plasma Ring Channels or Photonic Crystals in Air

Shen Shou Max Chung¹
 1. Department of Electrical Engineering, National Penghu University, Penghu, Taiwan, R.O.C.

2P35 - Investigation into the Propagation of Electron Beams of Different Shapes through Gas-Filled Space Using PIC Simulations

Prasoon Shukla¹, Varun², Udit Narayan Pal³, B. N. Basu⁴
 1. Academy of Scientific and Innovative Research, Ghaziabad, U.P.-201002, India
 2. CSIR- CEERI, Pilani, India and AcSIR, Ghaziabad, India
 3. CSIR-Central Electronics Engineering Research Institute, Pilani, India
 4. Sir J. C. Bose School of Engineering, Supreme Knowledge Foundation Group of Institutions, Mankundu, W.B.-712139, India.

2P36 - Electron Temperature and Density Measurements of Plasma Generated at the Focus of a CW Microwave Beam

Adrian Lopez¹, Remington Reid¹, John Foster²
 1. Air Force Research Laboratory
 2. University of Michigan

2P37 - Multipactor in Coaxial Transmission Lines

Nicholas M. Jordan¹, Flynn B. Darby¹, Stephen V. Langellotti¹, Y. Y. Lau¹, Ronald M. Gilgenbach¹
 1. University of Michigan

2P38 - DIAMOND FILM GROWTH USING A MICROWAVE PLASMA JET CHEMICAL VAPOR DEPOSITION

Chun-Yu Lin¹, Jing-Shyang Yen², Jwo-Shiun Sun², Hua-Yi Hsu¹, Ming-Chieh Lin³
 1. Department of Mechanical Engineering, National Taipei University of Technology
 2. Department of Electronic Engineering, National Taipei University of Technology
 3. Department of Electrical and Biomedical Engineering, Hanyang University,

2P39 - Suppressing single-surface multipactor discharges using non-sinusoidal electric field

Deqi Wen¹, Asif Iqbal¹, Peng Zhang¹, John P Verboncoeur¹
 1. Michigan State University

2P40 - Linear plasma experiment for non-linear microwave interaction experiments

Colin Whyte¹, Kieran Wilson¹, Alan Phelps¹, Adrian Cross¹, Alan Cairns², Robert Bingham, Bengt Eliasson¹, Mark Koepke³, David Speirs¹, Craig W. Robertson¹, Philip MacInnes¹, Ruth Bamford⁴, Kevin Ronald¹
 1. University of Strathclyde
 2. University of St Andrews

3. West Virginia University
4. STFC Rutherford Appleton Laboratory

2P41 - Air-plasma Characterization at THz Frequency range

Yin-Dong Huang¹
 1. School of Electronic Science and Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi 710049, China

2P42 - Electric field profiles in high gain GaAs photoconductive closing switches

Maksim Verkholeto¹, Ilya Prudaev¹
 1. Tomsk State University

2P43 - STUDY ON TRANSFORMER NEUTRAL POINT DC ISOLATION DEVICE BASED ON PLASMA-JET TRIGGERED GAS SWITCH

Shuhan Liu¹, Zheng Zhao¹, Yi Sun¹, Qingyu Li¹, Xinyun Zhang¹, Dongdong Huang¹, Jiarui Ren¹, Jiangtao Li¹
 1. School of Electrical Engineering, Xi'an Jiaotong University

2P44 - Perspectives of Supercritical Fluids for Switching Applications

Guus Pemen¹, Tom Huiskamp, Bert van Heesch², Wilfred Hoebe¹
 1. Eindhoven University of Technology
 2. TUE

2P45 - High performance triggering transformer for stack of series connected thyristors

Viliam Senaj¹, David Cabrerizo Pastor¹, Thomas Kramer¹
 1. CERN

2P46 - Data acquisition system for HEH monitor

David Cabrerizo Pastor¹, Viliam Senaj¹, Thomas Kramer¹
 1. CERN

2P47 - Development and Switching Characterization Study of Hot Cathode Thyatron for Pulse Modulator Applications in Linear Accelerator

Udit Narayan Pal¹, Mahesh Kumar², B. L. Meena², Ram Prakash Lamba², Harish Kumar Dwivedi³, A. R. Tillu⁴
 1. CSIR-Central Electronics Engineering Research Institute, Pilani, India
 2. Microwave Devices Area, CSIR-Central Electronics Engineering Research Institute (CEERI), Pilani, Rajasthan-333031, India
 3. Maharishi University of Information Technology, Lucknow, India
 4. Bhabha Atomic Research Centre (BARC), Mumbai, India

2P48 - DIFFERENT PATTERNS OF CURRENT QUENCHING PHENOMENA DURING PSEUDOSPARK DISCHARGE

Jiaqi Yan¹, Saikang Shen¹, Weidong Ding¹, Lanxi Li¹
 1. Xi'an Jiaotong University

2P49 - Performance of 20-kV, 20-A Silicon Carbide High-Voltage Modules

Miguel Hinojosa¹, Aderinto Oggunniyi¹
 1. Army Research Laboratory

2P50 - Surface Passivation of GaAs Photoconductive Semiconductor Switches with Silicon Resin

Yong-Pyo Kim¹, Pyeung Hwi Choi¹, Min-Seong Kim², Jiheon Ryu², Sung-hyun Baek², Sung-Min Hong¹, Sungbae Lee¹, Jae-Hyung Jang¹
 1. Gwangju Institute of Science and Technology
 2. Agency for Defense Development

2P51 - Comparison of Lateral and Vertical Photoconductive Semiconductor Switches Fabricated on 4H-SiC

Pyeonghwi Choi¹, Yong-Pyo Kim¹, Min-Seong Kim², Jiheon Ryu², Sung-Hyun Baek², Sung-Min Hong¹, Sung-Bae Lee¹, Jae-Hyung Jang¹
 1. Gwangju Institute of Science and Technology (GIST)
 2. The 4th R&D Institute, Agency for Defense Development

2P52 - Recovery Characteristics of a Plasma Closing Switch Filled with Air, N₂, CO₂, and an Ar/O₂ mixture

Yuan Yao¹, Igor Timoshkin¹, Scott MacGregor¹, Mark Wilson¹, Martin Given¹, Tao Wang¹

1. University of Strathclyde

2P53 - The Influence of Electrode Profile on Repetition Performance of Corona-stabilized Switch

Longjie Li¹, Yongsheng Wang¹, Jiangtao Li

1. Xi'an Jiaotong University

2P54 - Polarity Effect of Repetitive Corona Stabilization Breakdown

Longjie Li¹, Zheng Zhao¹, Jiangtao Li¹

1. School of Electrical Engineering, Xi'an Jiaotong University

2P55 - On the performance of triggered closing switches deployed in high explosive pulsed power experiments

Andrew Young¹, Ronnie Speer¹, Antonio Ferreira¹, Gary Mease¹, Aric Pearson¹, Ashton Ray¹

1. Lawrence Livermore National Laboratory

2P56 - MODERNIZATION OF THE MARX AND RIMFIRE TRIGGERING SYSTEMS FOR THE HERMES-III ACCELERATOR

Chris Grabowski¹, Nathan Joseph¹, SEAN COFFEY¹, Guillermo Archuleta¹, Ethan Gutierrez¹, Benjamin Hughes¹, John Lott¹, Robert Natal¹, Israel Owens¹, John Santillanes¹, Andrew Shay¹, Brent Smart¹, Gary Tilley¹, Keith Tunell¹

1. Sandia National Laboratories

2P57 - Silicon Carbide drift step recovery diode structures evaluated as >10kV nanosecond pulse power switches using Mixed-Mode simulation

Stephen Arthur¹, Reza Ghandi¹

1. GE Global Research Center

2P58 - Skin Effect and Energy Losses in Toroidal Core of Pulse Transformer

Boris Fridman¹, Konstantin Lobanov¹

1. Efremov Institute of Electrophysical Apparatus

2P59 - A High-gain nanosecond pulse generator based on inductor energy storage and pulse forming line voltage superposition

Jianhao Ma¹, shoulong dong¹, hongmei liu¹, liang Yu, Chenguo Yao

1. Chongqing University

2P60 - A Compensated Low-frequency Method for the Excitation Characteristics Measurement of Ferromagnetic Components

Xin Liu¹, Cheng Zhang², Shibin Liang³, Chenguo Yao

1. China Academy of Engineering Physics

2. Institute of Electronic Engineering, China Academy of Engineering Physics

3. Electric Power Test&Research Institute (group) Co., LTD

2P61 - STUDY ON SHEATH INDUCED VOLTAGE AND SPATIAL TEMPERATURE FIELD OF LONG-DISTANCE 330/110KV CABLE SHARED THE SAME PIPE JACKING

Shuhan Liu¹, Yi Sun¹, Chenjie Li¹, Yifeng Wang¹, Xin Feng¹, Yuhao Liu¹, Jiangtao Li¹

1. School of Electrical Engineering, Xi'an Jiaotong University

2P62 - A comprehensive design procedure for high voltage pulse power transformers

Michael Jaritz¹, Reto Christen¹, Matthias Bucher¹, Jasmin Smajic¹, Andreas Stöckli², Michael Bader², Thomas Franz¹

1. University of Applied Sciences Rapperswil

2. Astrol AG

2P63 - Study on aging characteristics of DC transmission line arrester considering impact load

Mengzhen Li¹

1. Xi'an Jiaotong University

2P64 - Research on Distribution Problem of Overvoltage Online Monitoring Device on Distribution Lines

Yuhao Liu, Jiangtao Li, Shuang He, Xin Feng¹

1. Xi'an Jiaotong University

2P65 - Design of A Long Pulse High Energy Water Transmission Line to Drive HPM Sources

Ian Chavez¹, Edl Schamiloglu¹, Kostyantyn Ilyenko², Yatsenko Tetyana², Salvador Portillo¹

1. University of New Mexico - Electrical and Computer Engineering Department

2. Department of Vacuum Electronics of the Institute for Radiophysics and Electronics of National Academy of Sciences of Ukraine

2P66 - A 1 MV Tesla pulsed transformer

Matthew Woodyard¹, Bucur Novac¹, Peter Senior¹

1. Loughborough University

2P67 - Comparison of decomposition by-products of C4F7N/CO₂ mixed gas under AC discharge breakdown and partial discharge

Yongyan Zhou¹, Chenwei Li², Nian Tang¹, Boya Zhang², Li Li¹,

Xingwen Li², Xiaodian Li¹

1. Electric Power Research Institute of Guangdong Power Grid Co. Ltd

2. Xi'an Jiaotong University

2P68 - Design of a Dielectric Compression Bushing for Compact, High-Voltage Applications

Michael Butcher¹, Manuel Alan¹, Dirk Frew¹, Michael Skipper², Michael Abdalla²

1. Verus Research

2. ASR Corporation

2P69 - A sequential characterization method for the insulation evaluation of the rod-plane gap under repetitive frequency nanosecond pulses in high-pressure nitrogen

Zheng Zhao¹, Dongdong Huang¹, Jiangtao Li¹

1. Xi'an Jiaotong University

2P70 - Experimental approach of the dielectric strength of a vacuum insulator

Baptiste Cadilhon¹, Laurent Courtois¹, Eric Pasini¹

1. CEA

2P71 - Effect of Dielectric Coating on Breakdown Strength in High Pressure SF₆

Chuyu Sun¹, Haiyang Wang¹, Linshen Xie¹

1. Northwest Institute of Nuclear Technology

2P72 - INFLUENCE OF THE CREEPAGE DISTANCE ON SURFACE FLASHOVER OF THE EPOXY INSULATION UNDER AC VOLTAGE IN C4F7N-CO₂ MIXTURES

Zhongbo Zheng¹, Weidong Ding¹, Zhichuang Li¹, Yishu Liu¹, Yue Li¹,

Chongjian Ge¹, Jiayin Yan¹

1. Xi'an Jiaotong University

2P73 - Electric Field Analysis of 35kV Line Arrester Under Different Environmental Conditions

Mengzhen Li¹

1. Xi'an Jiaotong University

2P74 - STUDY OF DISSOCIATION CHARACTERISTIC OF SF6-N2 MIXTURES UNDER CORONA DISCHARGE WITH PIN-TO-PLATE ELECTRODE

Jiayin Yan¹, Weidong Ding, Yanan Wang¹, Saikang Shen¹, Lanxi Li¹, Zheng Zhongbo¹

1. Xi'an Jiaotong University

2P75 - THE DISCHARGE CHARACTERISTICS OF C5 AND ITS MIXTURES IN UNIFORM FIELD UNDER AC VOLTAGE

Yue Li, Zhichuang Li¹, Jiayin Yan¹, Zheng Zhongbo¹, Yishu Liu, Yanan Wang¹, Alfred Suzan, Weidong Ding¹

1. Xi'an Jiaotong University

2P76 - C5F100/N2 GAS MIXTURE TO SUBSTITUTE SF6 IN HIGH VOLTAGE APPLICATIONS

yue li, Zhichuang Li, Jiaqi Yan¹, Yishu Liu, Zheng Zhongbo¹, Yanan Wang¹, Alfred Suzan, Weidong Ding¹

1. Xi'an Jiaotong University

2P77 - Investigation of impulsive breakdown of interfaces formed by ester insulating liquids and solid dielectrics

Chris Williamson¹, Igor Timoshkin¹, Scott MacGregor¹, Mark Wilson¹, Martin Given¹

1. Strathclyde University

2P78 - Research on the spectrum of the surface flashover of the high-gain GaAs photoconductive semiconductor switch

Shaoqiang Wang¹, Wei Shi¹, Cheng Ma¹, Hong Liu¹, Lei Hou¹

1. Xi'an University of Technology

2P79 - Modes of kHz AC discharge in liquid phase H2O

Xiaoliang Tang¹, Siyuan Dong, Zidian Liu, Gao Qiu

1. Plasma Physics & Application Lab., Department of Applied Physics, College of Science, Donghua University.

2P80 - Insulator Technologies to Achieve Maximum Electric Field Holdoff

Cameron Harjes¹, Jon Cameron Pouncey¹, Jane Lehr¹

1. UNM

2P81 - Impact on electrodes during plasma decomposition of carbon dioxide

Kamau Wright¹, Toby Poole¹, Chittaranjan Sahay¹

1. University of Hartford

Session: 4Plenary

Plenary Tues PM - Uri Shumlak

Tuesday 14:30 Room: Seminole Ballroom

Session Chair: Stuart Jackson

Sustained Fusion Reactions from a Sheared-Flow-Stabilized Z Pinch

Uri Shumlak¹

1. University of Washington

Session: 4A

8.5 Power Supplies and Modulators II

Tuesday 16:00 Room: Seminole C

Session Chair: Mark Sinclair

16:00 - 4A1 - (invited) Roadmap on the Development of Klystron Modulators for ESS

Carlos Martins¹

1. European Spallation Source

16:30 - 4A2 - Optimal Design of a High Voltage High Frequency Transformer and Power Drive System for Long Pulse

Modulators

Max Collins¹, Carlos Martins²

1. Lund University

2. European Spallation Source

16:45 - 4A3 - Saturating Pulse Transformer Circuits Using Advanced Magnetic Materials

Jon Pouncey¹, Jane Lehr¹, Brad Maynard¹, J. Martin Taccetti²

1. University of New Mexico

2. Los Alamos National Lab

17:00 - 4A4 - Integrated Klystron Test Stand

Rebecca Simpson¹, Michael Kempkes¹, Marcel Gaudreau¹, Luan Jashari¹

1. Diversified Technologies, Inc.

17:15 - 4A5 - Design of a Wide Band Test system with Interchangeable Antenna Modules

Jon Mayes¹, William Nunnally¹, Jeremy Byman¹, Matthew Lara¹, Chris

Hatfield¹, David Kohlenberg¹

1. Applied Physical Electronics L.C.

Session: 4B

1.2 Computational Plasma Physics II

Tuesday 16:00 Room: Seminole A/B

Session Chair: Yangyang Fu

16:00 - 4B1 - Macroparticle combination algorithm for plasma PIC simulation

Jarrold Leddy¹, John Cary², David Smithe¹

1. Tech-X Corporation

2. University of Colorado

16:15 - 4B2 - Benchmarking the Kinetic Global Model framework (KGMf): EEDF evaluations in low-temperature argon plasmas

Janez Krek¹, Yangyang Fu², John Verboncoeur²

1. Michigan State University, CMSE

2. Michigan State University

16:30 - 4B3 - (invited) Advanced Implicit and Hybrid Techniques for the Simulation of High Density Volumetric and Electrode Plasmas

Dale Welch¹, David Rose¹, Carsten Thoma¹, Dustin Offermann¹, Chris

Mostrom¹, Robert Clark¹, Thomas Genoni¹

1. Voss Scientific

17:00 - 4B4 - A multi-term spherical harmonic expansion of the Boltzmann equation for modeling low-temperature collisional plasmas

J.L. Giuliani¹, D.D. Hinshelwood¹, I.M. Rittersdorf, P.F. Ottinger², Tz.B.

Petrova¹, A.S. Richardson¹, S.B. Swanekamp¹, P. Adamson¹, S.L. Jackson¹

1. Plasma Physics Division, Naval Research Laboratory

2. Syntek Technologies, Arlington, VA 22203

17:15 - 4B5 - The rigid-beam model as a test case for simulations of plasma generated by an intense electron beam

Steve Richardson¹, Stephen Swanekamp¹, Tzvetelina Petrova¹, John

Giuliani¹, Paul Adamson¹, David Hinshelwood¹, Stuart Jackson¹, Joseph

Schumer¹

1. Naval Research Laboratory

Session: 4C

1.4 Partially Ionized Plasmas

Tuesday 16:00 Room: Gold Coast III/IV

Session Chair: Tobin Munsat

16:00 - 4C1 - (invited) Measurement of Photoionization Rates and Quenching Pressures

Justin K. Smith, Lisa E. Fisher, Jane M. Lehr, Michael D. Abdalla, Michael Skipper

16:30 - 4C2 - Experiment on the propagation of relativistic pulsed electron beam in plasma

R. Maissonny¹, Fabien Dorchie², Claude Fourment³, Thomas Lahens⁴

1. CEA, DAM, GRAMAT, F-46500 Gramat, France

2. Universite de Bordeaux-CNRS-CEA, CELIA, Talence F-33405 France

3. CEA

4. CEA-CESTA, Le Barp, F-33116 France

16:45 - 4C3 - Plume morphologies and their formation mechanism of an atmospheric pressure argon plasma jet excited by a biased voltage

Xuechen Li¹

1. Hebei University

17:00 - 4C4 - PLASMA PROPAGATION SPEED MODEL FOR INVESTIGATION OF ELECTRON TEMPERATURE AND PLASMA DENSITY OF AR PLASMA IN ATMOSPHERIC PRESSURE MICRO-DBD

PRADOONG SUANPOOT¹, Jirapong SORNSAK DANUPHAP¹, Bhagirath GHIMIRE², Guangsup CHO², Eun Ha CHOI²

1. Maejo University Phrae Campus

2. Kwangwoon University

17:15 - 4C5 - Overview and challenges of partially magnetized plasma modeling

Kentaro Hara¹

1. Texas A&M University

17:30 - 4C6 - Characteristics of pulsed discharge plasma with porous electrode without dielectric barrier at atmospheric pressure

Jie Li¹, Xi Li², Pan Dong¹, Zhen Yang², Jidong Long¹, Linwen Zhang¹

1. Institute of fluid physics

2. China Academy of Engineering Physics

Session: 4D

4.1 Fusion (Inertial, Magnetic and Alternate Concepts)

Tuesday 16:00 Room: Space Coast I-III

Session Chair: Adam Sefkow

16:00 - 4D1 - Radiative stabilization of the shock-driven interfacial instabilities in double-shell targets

Jiwei Li¹, Zhensheng Dai¹, Shiyang Zou, Shaoping Zhu¹, Xiantu He¹

1. Institute of Applied Physics and Computational Mathematics

16:15 - 4D2 - Numerical Analysis of Direct-drive Golden Double-shell Implosion

Yan Xu

16:30 - 4D3 - The preliminary experiment of driven pressure enhancement by hybrid drive on ShenGuang Laser facility

Ji Yan¹

1. Research Center of Laser Fusion

16:45 - 4D4 - EXPERIMENTAL STUDY OF FAST

DEUTERONS AND ELECTRONS IN DPF FUSION PLASMA

Pavel Kubes, Marek Sadowski¹, Marian Paduch², Jakub Cikhardt³, Daniel Klir³, Jozef Kravarik³, Karel Rezac³, Balzhima Cikhardtova³, Roch Kwiatkowski¹

1. NCNR

2. IPPLM

3. CTU

17:00 - 4D5 - STAGNATION PERFORMANCE SCALING OF MAGNETIZED LINER INERTIAL FUSION

Matthew Gomez, David Yager-Elorriaga¹, Clayton Myers¹, Stephen Slutz¹, Matthew Weis¹, Christopher Jennings¹, Derek Lamppa¹, Adam Harvey-Thompson¹, Matthias Geissel¹, Patrick Knapp¹, Eric Harding¹, Stephanie Hansen¹, Michael Mangan¹, Carlos Ruiz¹, Gordon Chandler¹, Tim Webb¹, Tommy Moore¹, George Laity¹, David Ampleford¹, Kyle Peterson¹, Greg Rochau¹, Daniel Sinars¹, Kelly Hahn²

1. Sandia National Laboratories

2. Lawrence Livermore National Laboratory

17:15 - 4D6 - Generating an imploding rotating plasma in MagLIF targets

Pierre Gourdain¹, Klaus Weide², Petros Tzeferacos², Marissa Adams¹

1. University of Rochester

2. University of Chicago

Session: 4E

9.1 Optical, X-ray, FIR and Microwave Diagnostics

Tuesday 16:00 Room: Gold Coast I/II

Session Chair: Peter Bruggeman

16:00 - 4E1 - GAS CONCENTRATION DISTRIBUTION NEAR SURFACE IN AN IMPINGEMENT OF ATMOSPHERIC PRESSURE PLASMA JET BY TWO-DIMENSIONAL FILTERED RAYLEIGH SCATTERING

Yuanfu Yue¹, Yedhu Krishna², Gaetano Magnotti²

1. University of Minnesota

2. King Abdullah University of Science and Technology

16:15 - 4E2 - Electric field measurement of discharge development in long sparks

Zhehao Pei¹, Xing Fan, Kai Bian, Qiaogen Zhang, Weijiang Chen, Shengxin Huang

1. Xi'an Jiaotong University

16:30 - 4E3 - ELECTRIC FIELD MEASUREMENTS IN A NANOSECOND PULSED ATMOSPHERIC PRESSURE PLASMA JET IN HELIUM

Mahsa Mirzaee¹, Marien Simeni Simeni¹, Peter Bruggeman¹

1. Department of Mechanical Engineering, University of Minnesota

16:45 - 4E4 - A new collisional radiative model for neon low temperature plasma

Rajesh Srivastava¹, Reetesh Kumar Gangwar², Shubham Baghel¹, Shivam Gupta¹

1. IIT Roorkee

2. IIT Tirupati

17:00 - 4E5 - ELECTRON PROPERTY MEASUREMENT OF A HIGH REPETITIVELY PULSED HELIUM PLASMA JET USING LASER THOMSON SCATTERING

James Horne¹, Jared Miles², Steve Adams³, Stephen Mammack², Campbell Carter², Chunqi Jiang⁴

1. Frank Reidy Research Center for Bioelectronics, Old Dominion University

2. Air Force Research Laboratory, Wright-Patterson Air Force Base

3. Air Force Research Laboratory

4. Old Dominion University

17:15 - 4E6 - Incoherent laser Thomson scattering diagnostics for streamer discharge in He gas

Kyohei Eguchi¹, Ryo Fujita¹, Douyan Wang², Kentaro Tomita³, Takao Namihira²

1. Graduate school of Science and Technology, Kumamoto University - Japan

2. Institute of Pulsed Power Science, Kumamoto University - Japan

3. Interdisciplinary Graduate School of Engineering Science, Kyushu University- Japan

17:30 - 4E7 - Advanced streamer imaging techniques

Siebe Dijcks¹, Sander Nijdam²

1. TU/e

2. Eindhoven University of Technology

Session: 4F

2.7 Microwave Plasma Interaction II

Tuesday 16:00 Room: Seminole D/E

Session Chair: John Leopold and John Verboncoeur

16:00 - 4F1 - Direct Detection of Multipactor in Waveguide Structures

Zachary Shaw¹, Luke R. Silvestre¹, Benedikt Esser¹, James Dickens¹, John Mankowski¹, Andreas Neuber¹

1. Texas Tech University

16:15 - 4F2 - TEMPORAL STUDY OF DUAL FREQUENCY MULTIPACTOR ON A DIELECTRIC

Asif Iqbal¹, John Verboncoeur¹, Peng Zhang¹

1. Department of Electrical and Computer Engineering, Michigan State University

16:30 - 4F3 - The Effects of Multipactor on the Quality of a Signal in a Transmission Line

Patrick Wong¹, Yue Ying Lau², Peng Zhang¹, Nick Jordan², Ronald

Gilgenbach², John Verboncoeur¹

1. Michigan State University

2. University of Michigan

16:45 - 4F4 - CST PARTICLE STUDIO SIMULATIONS OF COAXIAL MULTIPACTOR SUSCEPTIBILITY AND EVOLUTION

Stephen V. Langellotti¹, Nicholas M. Jordan¹, Y.Y. Lau¹, Ronald M.

Gilgenbach¹

1. University of Michigan

17:00 - 4F5 - Multipactor dynamics under obliquely incident rf electric field

De-Qi Wen¹, Peng Zhang¹, Yangyang Fu¹, Janez Krek¹, John P

Verboncoeur¹

1. Michigan State University

17:15 - 4F6 - SECONDARY ELECTRON YIELD MEASUREMENTS ON MATERIALS OF INTEREST TO HIGH VACUUM ELECTRONIC COMMUNICATION DEVICES

Talal Ahmed Malik, Sal Portillo¹, Joe Chen, Raul Gutierrez, Ryan Johnson, Edl Schamiloglu¹, M. Gilmore¹

1. University of New Mexico

17:30 - 4F7 - PREDICTING SECONDARY ELECTRON YIELD FROM FIRST PRICIPLES CALCULATIONS

Ryan Johnson¹, Raul Gutierrez, Salvador Portillo¹, Mark Gilmore¹, Edl

Schamiloglu¹

1. University of New Mexico

Wednesday AM

Session: 5Plenary

Plenary Wed - Alexander Kim (2019 Erwin Marx Award)

Wednesday 8:30 Room: Seminole Ballroom

Session Chair: Bryan Oliver

The Story of the LTD Development

Alexander A. Kim¹

1. Institute of High Current Electronics, Siberian Branch, Russian Academy of Sciences

Session: 5A

1.1 Basic Phenomena II

Wednesday 10:00 Room: Seminole A/B

Session Chair: Patrick Wong

10:00 - 5A1 - (invited) Direct observation of the current evolution in a small-scale self-compressing plasma column

Christine Stollberg¹, Eyal Kroupp¹, Dmitry Mikitchuk¹, Marko Cvejic¹,

Ramy Doron¹, Evgeny Stambulchik¹, Y. Maron¹, Amnon Fruchtman², Uri Shumlak³, John Giuliani⁴

1. Weizmann Institute of Science

2. Holon Institute of Technology, Israel

3. University of Washington

4. Plasma Physics Division, Naval Research Laboratory

10:30 - 5A2 - Identification of the Corona Point in Point-to-Plane Geometries in Atmospheric Air

Leonardo Rossetti¹, jane Lehr¹

1. University of New Mexico

10:45 - 5A3 - On three different ways to quantify the degree of ionization in sputtering magnetrons

Alexandre Butler¹, Nils Brenning², Michael A. Raadu²,

Jon Tomas Gudmundsson³, Tiberiu Minea¹, Daniel Lundin¹

1. Université Paris-Sud

2. KTH Royal Institute of Technology

3. University of Iceland

11:00 - 5A4 - Nonlinear Electron Power Absorption in Capacitively Coupled Radio Frequency Discharges

Sebastian Wilczek¹, Jan Trieschmann², Ralf Peter Brinkmann¹, Julian Schulze¹, Zoltán Donkó³, Thomas Mussenbrock²

1. Ruhr University Bochum

2. Brandenburg University of Technology Cottbus-Senftenberg

3. Wigner Research Centre for Physics

11:15 - 5A5 - Observation of positive and negative nanosecond pulsed streamers in a coaxial electrode using a quadruple emICCD camera system

Hitoshi Yamaguchi, Terumasa Ryu¹, Douyan Wang², Takao Namihira²

1. Kumamoto University

2. Institute of Pulsed Power Science, Kumamoto University

11:30 - 5A6 - Comparison of Shockwave Characteristics Induced by Wire Explosion and Water Gap Discharge

Yi Liu¹, Yijia Ren², Siwei Liu², Fuchang Lin¹, Yang Liu²

1. 1. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, School of Electrical and Electronic Engineering, Huazhong University of Science & Technology, Wuhan, Hubei Province, China 2. Key

Laboratory of Pulsed Power Technology (Huazhong University of Science and Technology), Ministry of Education, Wuhan, Hubei Province, China

2. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, School of Electrical and Electronic Engineering, Huazhong University of Science & Technology, Wuhan, Hubei Province, China

11:45 - 5A7 - Influence of conductivity on streamer propagation and shockwave intensity in underwater pulsed discharge

YI LIU¹, Siwei Liu¹, Yijia Ren¹, Fuchang Lin¹, Yang Liu¹

1. Huazhong University of Science and Technology

Session: 5B

2.1 Intense Beam Microwave Generation

Wednesday 10:00 Room: Gold Coast I/II

Session Chair: Rebecca Seviour

10:00 - 5B1 - (invited) Limits to High Power Amplification

John Luginsland¹, Jack Watrous¹, David Simon², Brad Hoff²

1. Confluent Sciences, LLC

2. Air Force Research Laboratory

10:30 - 5B2 - Rep-rated Testing of a Compact Magnetron with Diffraction Output (MDO) and Plans for Testing the Full MDO

Dmitrii Andreev¹, Artem Kuskov¹, Daniel Reass¹, Andrew Sandoval¹, Edl Schamiloglu¹, Yeong-Jer Chen², Jack Kreger², Jordan Chaparro²

1. University of New Mexico

2. NSWC

10:45 - 5B3 - Experimental Results of a Metamaterial-Enhanced Resistive Wall Amplifier Prototype

Patrick Forbes¹, John Booske¹, Nader Behdad¹

1. Electrical and Computer Engineering Department University of Wisconsin-Madison

11:00 - 5B4 - High Power Amplification Experiments on a Recirculating Planar Crossed-Field Amplifier

Steven Exelby¹, Geoffrey Greening¹, Nicholas Jordan¹, Drew Packard¹, Yue

Ying Lau¹, Ronald Gilgenbach¹, Brad Hoff², David Simon²

1. University of Michigan

2. Air Force Research Laboratory

11:15 - 5B5 - Inter-Digital Magnetron and Rippled-Field Magnetron: Two Remarkable Reincarnations of a Voltage-Tunable Magnetron

Andrey Andreev¹, Dmitrii Andreev¹, Samuel Smith¹, Stacie Hernandez¹,

Ahmed Elfrgani¹, Edl Schamiloglu¹

1. University of New Mexico

11:30 - 5B6 - High-Power Microwave Generation by a Double-Anode Virtual Cathode Oscillator

Kazuki Nagao¹, Kazuya Sakurai¹, Wataru Takatsu¹, Van Thuan Pham¹,

Taichi Sugai¹, Weihua Jiang¹

1. Nagaoka University of Technology

11:45 - 5B7 - Problems of development a cold-cathode magnetron in pulse mode for application in an accelerator

Sergiy Cherenshchykov, Sergiy Cherenshchykov

Session: 5C

4.6 Fast Z Pinches I

Wednesday 10:00 Room: Seminole D/E

Session Chair: Steve Richardson

10:00 - 5C1 - (invited) New insights in pulsed power driven

explosion of underwater wires and wire arrays

Simon Bland¹, David Yanuka¹, Alexander Rososhek², Savva Theocharous¹, Sergey Efimov², Margie Olbinado³, Alexander Rack³, Ya.E. Krasik²

1. Imperial College London

2. Technion

3. European Synchrotron Radiation Facility

10:30 - 5C2 - Thomson Scattering on Laboratory Plasma Jets to Study Current Polarity Effects

Jacob Banasek¹, Sophia Rocco¹, Tom Byvank¹, William Potter¹, Bruce Kusse¹, Dave Hammer¹

1. Cornell University

10:45 - 5C3 - ALUMINUM DOUBLE PLANAR WIRE ARRAYS AND DOUBLE PLANAR FOIL LINERS ON THE UNR AND UM PULSED POWER DRIVERS

Christopher Butcher¹, Victor Kantsyrev¹, Alla Safronova¹, Ishor Shrestha¹, Jeffrey Rowland¹, Veronica Shlyaptseva¹, Austin Stafford¹, Paul Campbell², A. M. Steiner², Stephanie Miller², D. A. Yager-Elorriaga², Nick Jordan², Ryan McBride², Ronald Gilgenbach²

1. University of Nevada, Reno

2. University of Michigan

11:00 - 5C4 - Photonic Doppler Velocimetry (PDV) of Bare and Dielectric-Coated Aluminum Exploded by Intense Current

Bruno Bauer¹, Trevor Hutchinson¹, Thomas Awe², Sheri Payne², Daniel Dolan², Brian Hutsel², Jamin Pillars², Bonnie McKenzie², Sonal Patel², Kevin Yates³, Vladimir Ivanov¹, Stephan Fuelling¹, Richard Siemon, Seth Kreher¹, Christopher Rousculp³, Irvin Lindemuth¹, Edmund Yu²

1. University of Nevada, Reno

2. Sandia National Laboratories

3. Los Alamos National Laboratory

11:15 - 5C5 - Shock waves generated by underwater electrical explosion of a single wire

Sasha Rososhek¹, Sergey Efimov¹, Viktor Gurovich¹, A. Virozub¹, Somesh Tewari, Ya.E. Krasik²

1. Technion

2. Physics Department, Technion, Israel Institute of Technology

11:30 - 5C6 - (invited) Irradiation of silicon targets by outflows emitted by conical wire array Z-pinches.

Felipe Veloso¹, Gonzalo Muñoz-Cordovez¹, Mario Favre, Donovan Diaz-Droguett¹, Vicente Valenzuela-Villaseca¹, Milenko Vescovi¹, Heman Bhuyan², Edmund Wyndham³

1. P Universidad Catolica de Chile

2. Pontificia Universidad Católica de Chile

3. Instituto de Física, Pontificia Universidad Católica de Chile

Session: 5D

6.1 Nonequilibrium Plasma Applications I

Wednesday 10:00 Room: Seminole C

Session Chair: Guodong Meng

10:00 - 5D1 - (invited) EFFECTIVE METHANE CONVERSION BY NEGATIVE NANOSECOND REPETITIVELY PULSED DISCHARGE

Cheng Zhang¹, Shuai Zhang¹, Hao Sun¹, Bangdou Huang¹, Yuan Gao¹, Tao Shao¹, Zehui Liu¹

1. Key Laboratory of Power Electronics and Electric Drive, Institute of Electrical Engineering, Chinese Academy of Sciences

10:30 - 5D2 - The dynamics of the microplasmas inside a capillary

Shuqun Wu, Xueyuan Liu, Chang Liu, Yuxiu Chen, Chaohai Zhang

10:45 - 5D3 - PLASMA TREATMENT ON HEAVY OIL

MODEL COMPOUNDS IN A NANOSECOND PULSED DBD REACTOR

Hao Sun¹, Shuai Zhang¹, Yuan Gao¹, Cheng Zhang¹, Tao Shao¹

1. Key Laboratory of Power Electronics and Electric Drive, Institute of Electrical Engineering, Chinese Academy of Sciences

11:00 - 5D4 - Development of Low Frequency Dielectric Barrier Discharge using Rotatable Electrodes

Tatsuo Ishijima¹, Kentaro Morimoto¹, Naw Rutha Paw¹, Takuma Kimura², Mohammad Rasel Pervez¹, Eugen Stamate³, Yasunori Tanaka¹, Yoshihiko Uesugi¹

1. Kanazawa University

2. National Institute of Technology Ishikawa College

3. Technical University of Denmark

11:15 - 5D5 - Plasma assisted Chemical Looping reactions using nano-catalysts for co-production of syngas and hydrogen

Rajagopalan Ranganathan¹, Zhongqi Liu¹, Steven Fondriest¹, Robert Dupont², Amelia Biase³, Laura Holifield¹, Ruigang Wang¹, Mruthunjaya Uddi¹

1. University of Alabama

2. Michigan Technological University

3. Smith College Picker Engineering Department, MA

11:30 - 5D6 - Transient Plasma-based Remediation of Nanoscale Particulate Matter

Sisi Yang, Sriram Subramanian, Dan Singleton, Christi Schroeder, William Schroeder, Martin Gundersen, Stephen Cronin

11:45 - 5D7 - Pattern Dependent Profile Distortion in Plasma Etching of High Aspect Ratio Features

Shuo Huang¹, Seungbo Shim², Sang Ki Nam², Wonyup Ko², Mark Kushner¹

1. University of Michigan

2. Samsung Electronics Co. Ltd.

Session: 5E

7.3 Compact Pulsed Power

Wednesday 10:00 Room: Space Coast I-III

Session Chair: Laurent Pecastaing

10:00 - 5E1 - (invited) Pulsed Power Technology and Application Development at Nagaoka University of Technology

Weihua Jiang¹, Taichi Sugai¹, Akira Tokuchi¹

1. Nagaoka University of Technology

10:30 - 5E2 - Advanced NanoDielectric Material Scaling for Further Size Reduction of Ultra-High Voltage, 500 kV Capacitor Prototypes

Randy Curry¹, Luke Brown¹, Samuel Dickerson¹, Sarah Mounter¹, Aaron

Maddy¹, Madison Schwinn¹

1. University of Missouri

10:45 - 5E3 - First implementation of a solid-state Impedance-Matched Marx Generator

Tom Huiskamp¹, Jeroen van Oorschot¹

1. Eindhoven University of Technology

11:00 - 5E4 - PORTABLE SHORT PULSE NEUTRON SOURCE FOR IDENTIFICATION AND LOCALIZATION OF CLANDESTINE NUCLEAR MATERIALS

Brady Gall¹, Michael Heika², Michael Blasco², Joseph Bellow², Bernard

Meehan³, Jessie Walker⁴, Mark Gerling⁵, Yuri Podpaly⁶

1. Mission Support and Test Services LLC

2. NNSS

3. NSTec

4. Los Alamos National Laboratory

5. Sandia National Laboratories
6. Lawrence Livermore National Laboratory

11:15 - 5E5 - Low Energy Laser Triggering at 1535 nm

Jon Pouncey¹, Jane Lehr², Josh Foster³, Scott Hamlin³

1. University of New Mexico
2. University of New Mexico
3. MegaWatt Lasers Inc

11:30 - 5E6 - Microsecond Fast, 100 kV Modular Pulse Charger

Tyler Klein¹, Andreas Neuber¹, James Dickens¹

1. Texas Tech University

11:45 - 5E7 - New Marx based generator using IGBTs for adjustable quasi-rectangular pulses

Yahia ACHOUR¹, Jacek Starzyński¹, Andrzej Łasica²

1. Military University of Technology
2. Warsaw University of Technology

Session: 5F

10.3 System Modeling, Thermal, EMI and Circuits

Wednesday 10:00 Room: Gold Coast III/IV

Session Chair: Heather O'Brien

10:00 - 5F1 - (invited) Investigation of Low Amplitude Lighting Strikes On Low Voltage Electrical Systems

David Barnett¹, Landon Collier¹, William Brooks¹, Andreas Neuber¹, John Mankowski¹, James Dickens¹, Anthony Harrison², W. A. Harrison³, David Hattz³

1. Texas Tech University
2. CERN
3. CNS Pantex

10:30 - 5F2 - Modeling of Pulse Transformer Based on Impedance Characteristics Measurement and Two-port Network Theory

Xin Liu¹, Cheng Zhang¹, Xian Liu¹

1. Institute of Electronic Engineering, China Academy of Engineering Physics

10:45 - 5F3 - Characterization of Sustained Series dc Arc Duration for Advanced Detection Schemes

Bailey Hall¹, Dennis Grosjean², Dan Schweickart³, Jin Wang¹

1. The Ohio State University
2. Innovative Scientific Solutions, Inc.
3. Air Force Research Laboratory-WPAFB

11:00 - 5F4 - Three-Dimensional Model of the Saturn Accelerator Water Tri-plate Transmission Line Connection to the Vacuum Insulator Stack

Ken Struve¹

1. Sandia National Laboratories

11:15 - 5F5 - Denying Unmanned Aerial Vehicle Invasion using High Power Electromagnetic Waves

Jing-Shyang Yen¹, Jwo-Shiun Sun¹, Xuan-De Huang¹, Chia-Wei Lin¹,

Hua-Yi Hsu¹, Chii-Ruey Lin², Kaviya Aranganadin³, Ming-Chieh Lin³

1. National Taipei University of Technology
2. Minghsin University of Science and Technology
3. Hanyang University

11:30 - 5F6 - Solid State Power Emulator to Evaluate H-Bridge Module Temperature Comparison

Richard Thomas¹, Lauren Boteler¹

1. Army Research Laboratory

11:45 - 5F7 - Lumped Circuit Model of Multi-Pulse Laser

Triggered Gas Switch with Braginskii Resistivity

Joe Chen¹, Salvador Portillo¹, Gregory Dale²

1. University of New Mexico
2. Los Alamos National Laboratory

Wednesday PM

Session: 3P

Poster - Industrial/Commercial/Medical Applications and Plasma and Pulse Power Diagnostics

Wednesday 13:30 Room: Universal Center

Session Chair: Li Lin, Shutong Song, and Yunping Zhang

3P01 - Novel High Voltage Pulsing to Generate Uniform Glow Discharge Air Plasma for Environment Friendly Inline

Treatment of Textile

Vishal Jain¹, Kushagra Nigam¹, Nisha Tanwani¹, Adam Sanghariyat¹, Nimish Sanchania¹, Sudhir Kumar Nema¹

1. Institute for Plasma Research

3P02 - Reactive Sputtering of Aluminum Acetylacetonate for Deposition of Alumina Films

Ricardo Blanco¹, Larissa de Almeida², Rafael Ribeiro², Luciana Rossino³, Nilson Cruz¹, Elidiane Rangel⁴

1. São Paulo State University (UNESP)
2. São Paulo State University (UNESP), Institute of Science and Technology, Sorocaba, Av. Três de Março, 511, Sorocaba, São Paulo 18087-180, Brazil
3. Sorocaba Technological College – FATEC
4. Paulista State University

3P03 - Investigation on Utilizing Audio Square Wave and Radio-Frequency Plasmas for Cleaning of Vacuum Diode Electrodes

Ricky Tang¹, Derek Lamppa¹

1. Sandia National Laboratories

3P04 - Spectroscopic Measurement of Active Species Generated in Streamer Discharge on Water Surface

Takuya Hayashi¹, Souhei Toyoda¹, Tomokazu Kanna¹, Takashi Sakugawa¹

1. Kumamoto University

3P05 - Reillumination of Expiring Corona-like Pulsed Discharges in Water

Raphael Rataj, Hans Höft¹, Juergen Kolb¹

1. Leibniz Institute for Plasma Science and Technology (INP)

3P06 - Plasma Properties in a High Pressure ALD Reactor

Chenhui Qu¹, Pulkit Agarwal², Yukinori Sakiyama², Adrien LaVoie², Mark J. Kushner¹

1. University of Michigan
2. Lam Research Corp.

3P07 - Electrical Discharge in Gas-liquid Mixture: Breakdown Voltage and Energy Deposition Distribution in Each Phase

KUNPENG WANG¹, David Staack¹

1. Texas A&M University

3P08 - Evaluation of electric field and charge on bio-substrates induced by nanosecond pulsed helium plasma jet

xi li¹, shutong song¹, David Alderman¹, Muhammad Arif Malik², Richard Heller¹, Chunqi Jiang¹

1. Old Dominion University

3P09 - TWO TEMPERATURE SIMULATION OF SUBATMOSPHERIC ARC DISCHARGE

Madhusudhan Kundrapu¹, Andrew Chap¹, Michel de Messieres¹, Carles Corbella², Michael Keidar²

1. Tech-X Corporation
2. The George Washington University

3P10 - Gas Temperature Determination of Nonthermal Plasma Through Boltzmann Plot Method

Marcus Ashford¹, James Allen², Jennifer Zirnheld³, Kevin Burke³

1. Primary Contributor
2. Secondary Contributor
3. Faculty Supervisor

3P11 - Temporal Gas Temperature Measurement of Single Filament in Atmospheric Pressure Plasma Jet

Jiayin Li¹, Fan Wu, Xinpei Lu

1. Huazhong University of Science and Technology

3P12 - One-dimensional Numerical Simulation on Nanosecond Pulsed Discharge

Guofeng Lou¹, Fangtian Ma¹

1. University of Science & Technology Beijing, China

3P13 - Corona Discharge Induced Submicron Water Droplet Coalescence and Growth in a Subsaturated Cloud Chamber

Pengyu Wang¹, Jiawei Li², Chuan Li³, Zhi Liu², Ming Zhang³, Yong Yang³, Kexun Yu³

1. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, School of Electrical Engineering and Electronics, Huazhong University of Science and Technology
2. International Joint Research Laboratory of Magnetic Confinement Fusion and Plasma Physics, Huazhong University of Science and Technology
3. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology

3P14 - Argon cold atmospheric pressure plasma jet enhancing seed germination and seedlings growth of fenugreek (*Trigonella foenum-graecum*)

Tahar Boutraa¹, Sahar Fadhalmawla¹, Jamal Almarashi¹, Abdel-Aleam Mohamed¹

1. Taibah University

3P15 - The Characteristics of Ozone Generation in the Atmospheric Dielectric Barrier Discharges

SICHAN KIM¹, Byung-Koo Son¹, Hyun Cho¹, Yun-Jung Kim¹, Bong-Joo Park¹, Guangsup Cho¹

1. KWANGWOON UNIVERSITY / Department of Electrical and Biological Physics

3P16 - THIN-FILM DEPOSITION OF AL₂O₃-FILLED EPOXY RESIN USING PULSED PLASMA IN AR/O₂/TEOS MIXTURE

Tingting Wang¹, Cheng Zhang², Fei Kong², Hao Sun³, Haofan Lin², Tao Shao²

1. CSG Technology Research Center
2. Key Laboratory of Power Electronics and Electric Drive, Institute of Electrical Engineering, Chinese Academy of Sciences
3. University of Chinese Academy of Sciences

3P17 - Investigation on shock wave generated by underwater discharge due to different progress of plasma

Mitsuhiko Sato¹, Koki Takaura¹, Takashi Sakugawa², Hamid Hosano²

1. Kumamoto University
2. Institute of Pulsed Power Science

3P18 - CALCULATION OF ARC CONDUCTANCE

AFFECTED BY FLOW FIELD FOR IMPROVEMENT OF CURRENT INTERRUPTION PERFORMANCE

Yuya Ishikawa¹, Yuji Komai, Yoshifumi Maeda¹, Toru Iwao¹

1. Tokyo City University

3P19 - Spectroscopic Characteristics of Pulsed Arc Discharge in Supercritical Nitrogen

Tomohiro Furusato¹, Tsuyoshi Kiyan², Daishi Suzuki²

1. Nagasaki University
2. Kindai University

3P20 - Research on Nanoparticle Production by TIG Pulsed Arc Discharge

Daishi Suzuki¹, Tsuyoshi Kiyan¹

1. Kindai University

3P21 - Development of 3D Electromagnetic Thermal Fluid Simulation for Elucidation of Gas Contamination Process of Circuit Breaker

Shoya Nishizawa¹, Yoshifumi Maeda¹, Toru Iwao¹

1. Tokyo City University

3P22 - Performance of a Pulsed Electromagnetic Micropropulsion System with Low Energy Surface Flashover Igniter

Adam Patel¹, Yunping Zhang¹, Alexey Shashurin¹

1. Purdue University

3P23 - High density plasma thruster

Dejan Nikic¹, James Grossnickle¹

1. The Boeing Company

3P24 - STUDY ON STABILITY OF AN INNOVATIVE IGNITION TECHNOLOGY FOR MICRO-CATHODE ARC THRUSTER

Chongjian Ge¹, Yanan Wang¹, Le Cheng¹, Tianbo Zhang¹, Weidong Ding¹, Jinyue Geng¹

1. State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University

3P25 - Pulsed power supply design for vacuum arc thrusters application

Marvin Kuehn¹, Jochen Schein¹

1. Bundeswehr University Munich (BUM)

3P26 - Study of Conductivity on Hydrogen Peroxide Concentration by High Repetitive Underwater Discharge

Daiki Sugawara¹, Shunsei Kawamura¹, Hisanori Sone¹, Masahiro Akiyama¹

1. Iwate University

3P27 - Sterilization of E. coli in seawater using discharge in water and dielectric barrier discharge

Hisanori Sone¹, Shunsei Kawamura¹, Koichi Takaki¹, Katsuyuki Takahashi¹, Masahiro Akiyama¹

1. Iwate University

3P28 - Flexible Control of Pulsed Power Generator for Research Applications with Sensors

Masahiro Akiyama¹, Shunsei Kawamura¹

1. Iwate University

3P29 - Plasma source for generating ultrasonic and ultraviolet radiation in water

Joseph Groe¹, John Foster¹

1. University of Michigan

3P30 - Production of crushed sand using underwater pulsed discharge

Naoki Matsumoto¹, Masaaki Yano¹, Takao Namihira², Douyan Wang², Mitsuhiro Shigeishi¹
1. Graduate School of Science and Technology, Kumamoto University, Japan
2. Institute of Pulsed Power Science, Kumamoto University in Japan

3P31 - Aggregation inhibition of nanoparticle dispersion by nonthermal plasma irradiation

Katsushi Suenaga¹, Ayumu Hyodo¹, Yuta Kawamura¹, Douyan Wang², Takao Namihira²
1. Graduate School of Science and Technology, Kumamoto University, Japan
2. Institute of Pulsed Power Science, Kumamoto University, Japan

3P32 - Experimental Research on Solar Panels Fragmentation by Electro-Hydraulic Effect with Application of Pulsed Power

Mengyao Zhang¹, Baipeng Song¹, Ling Jiang², Jun Kang², Zhanlin Li², Yao Chen², Guanjuan Zhang¹
1. Xi'an Jiaotong University
2. Electric Power Research Institute of State Grid Qinghai Electric Power Company

3P33 - Calculation and Analysis of Self-resistance of Grounding Material

Jiayin Yan¹, Zhu Yinan¹, Lanxi Li¹
1. Xi'an Jiaotong University

3P34 - Growth of photocatalytically active coatings on aluminum by Plasma Electrolytic Oxidation

Lívia Sottovia¹, Elidiane C Rangel², Nilson C Cruz³
1. Laboratory of Technological Plasmas - Unesp, Sorocaba, Brazil
2. Laboratory of Technological Plasmas, Paulista State University
3. Sao Paulo State University

3P35 - Re-orientation of BN nanosheet induced by pulsed electric field and its effect on thermal properties of epoxy resin-based nanocomposites

Yan Mi¹, Lulu Liu¹, Lu Gui¹, Xin Ge¹
1. Chongqing University

3P37 - Electric breakdown in granite as a function of pressure and temperature conditions

Tony IMBERT¹, Thierry REESS², Antoine de Ferron³, Laurent PECASTAING², Gauthier Demol¹, Baptiste Guegan¹
1. ITHPP
2. UNIV PAU & ADOUR, Laboratoire des Sciences de l'Ingénieur Appliquées à la Mécanique et au Génie Electrique, IPRA, EA4581, 64000, Pau, France
3. Pau University

3P38 - Excess ion energy being essential for ultra-shallow implantation

Noriyuki Sakudo¹, Noriaki Ikenaga¹
1. Kanazawa Institute of Technology

3P39 - Investigation of Energy Control in Coaxial Reactor for Ozone Production by Using Nanosecond Pulsed Powers

Yoshifumi Sanuki¹, Yuki Utsumi¹, Kenji Teranishi¹, Naoyuki Shimomura¹
1. Tokushima University

3P40 - Improvement of ozone generation characteristics with shorter rise time of nanosecond pulse voltage

Hideaki Fukuoka¹, Shuhei Iida², Douyan Wang³, Takao Namihira³
1. Graduate School of Science and Technology
2. Graduate School of Science and Technology, Kumamoto University – Japan
3. Institute of Pulsed Power Science, Kumamoto University – Japan

3P41 - Short Term Atmospheric Pressure Cold Plasma treatment: A Novel Strategy for enhancing the Substrate Utilization in a thermophile, Geobacillus sp. strain WSUCF1

Magesh Rajan¹, Navanietha Rathinam¹, Rajesh Sani¹
1. South Dakota School of Mines and Technology

3P42 - Plasma Kinetics Study of a Repetitive 10-ns Pulsed Plasma Ignition for Combustion

David Alderman¹, Christopher Tremble¹, Shutong Song¹, Jason Sanders², Dan Singleton, Chunqi Jiang¹
1. Old Dominion University
2. Transient Plasma Systems, Inc.

3P43 - Temperature effect on the surface flashover plasma of the GIS insulator

Shijie LU¹, Liangen ZHANG¹, Hongtao ZHONG², Guo-ming MA¹, Cheng-rong LI¹, Yu YIN³, Boyuan CUI³, yuyi WU³
1. North China Electric Power University
2. Princeton University
3. China Electric Power Research Institute

3P44 - Erosion characteristics for different geometric electrodes in an AC rotating arc reactor

Kwan-Tae Kim¹, Hongjae Kang¹, Chan Mi Jung¹, Sungkwon Jo¹, Dae Hoon Lee¹, Young-Hoon Song¹
1. Korea Institute of Machinery and Materials

3P45 - Statistical examination of spoke evolution in HiPIMS

Peter Klein¹, James W. Bradley², Jaroslav Hnilica¹, Petr Vašina¹
1. Masaryk University
2. University of Liverpool

3P46 - Lorentz Force Eddy Currents for Nondestructive Testing

Agni Dhanabal¹, Trevor Drouillard¹, Robert Kile¹, Paul Melnik², Kenneth Miller², James Prager², Timothy Ziemba², Allen Garner¹
1. Purdue University
2. Eagle Harbor Technologies

3P47 - Pulsed High Voltage Assisted Laser Self-Induced Plasma Shutter for High Spatial Resolution Laser Remote Sensing

Taieb Gasmi Cheriif¹
1. Saint Louis University-Madrid Campus

3P48 - Design of optimal pulse solenoid structure for industrial application Y.Livshitz, former CTO Pulsar, Yavne, Israel

Yuri Livshitz¹

3P49 - Atmospheric plasma for treatment of perfluoroalkyl substances (PFAS) in water: reactor design and performance evaluation

Mubbshir Saleem¹, Mirko Magarotto¹, Omar Biondo¹, Pavarin Daniele¹, tampieri francesco¹, Cristina Paradisi¹, ester marotta¹, Marco Manente¹
1. University of Padova

3P50 - CELL GEOMETRY-INVARIANT CALCULATION OF PLASMA MEMBRANE POTENTIAL DUE TO ELECTRIC PULSES USING VARIATIONAL CALCULUS

Adam Darr¹, Allen Garner¹
1. Purdue University

3P51 - Modification of the Hodgkin-Huxley wave behavior by electroporation

Amanda Loveless¹, Martin Lopez de Bertodano¹, Allen Garner¹
1. Purdue University

3P52 - MODELING PLASMA SPECIES FORMATION FOR HIGH VOLTAGE ATMOSPHERIC COLD PLASMAS

Nancy Isner¹, Allen Garner¹
1. Purdue University

3P53 - Magnetic field effects on efficiency of non-viral gene delivery using magnetic nanoparticles

Vasile Neculaes¹, Brian Bales², Allen Garner³, Evelina Loghin², JB Mathieu²

1. GE

2. GE Global Research

3. Purdue University

3P54 - Effects of Nanosecond Pulsed Electric Fields Application and Combination of Anticancer Drug on Cancer Cell

Soichiro Enomoto¹, Yasuo Yamamoto¹, Daisuke Konishi¹, Mana Futawaka¹, Yuki Kusuhashi¹, Kenji Teranishi¹, Yoshihiro Uto¹, Naoyuki Shimomura¹

1. Tokushima University

3P55 - Cold atmospheric plasma for cancer immunotherapy

Zhitong Chen¹, Richard Wirz¹

1. University of California, Los Angeles

3P56 - Variation of Physical Parameters in Plasma Wound Healing

Jimo Lee¹, Won Seok Kim², Ki Beom Bae³, Jae Koo Lee², Gunsu Yun²

1. POSTECH

2. Pohang University of Science and Technology

3. Pohang Techno Park

3P57 - THE CURRENT TECHNOLOGY OF PLASMA SKINCARE AESTHETIC DEVICES

Guangsup Cho¹, Byung-Koo Son¹, Sichan Kim¹, Chanwoo Moon¹, Hyun Cho¹, Yun Jung Kim¹, Bong Joo Park¹

1. KWANGWOON UNIVERSITY / Department of Electrical and Biological Physics

3P58 - The Influence of Applying High Electrical Field Pulses on Unfolded Protein Response of cells

Akira Izutani¹, Yuji Furumoto¹, Yoshimasa Hamada¹, Masato Miyake¹, Kenji Teranishi¹, Naoyuki Shimomura¹, Seiichi Oyadomari¹

1. Tokushima University

3P59 - Inactivation process observation of HeLa cells induced by atmospheric-pressure pulsed plasma jet

Tomohiro Ueji¹, Ken Watanabe¹, Yudai Suzuki¹, Takao Namihiro¹, Douyan Wang¹

1. Kumamoto University

3P60 - Optimization of GFP introduction into HL-60 cells with a combination of two different rectangular pulses

Susumu Kono¹, Nobuaki Tominaga¹

1. National Institute of Technology, Ariake College

3P61 - NON-THERMAL PLASMA TREATMENT OF ARABIDOPSIS THALIANA WITH EFFECT ON EARLY DEVELOPMENT AND THE ACCUMULATION OF HORMONES GERMINATED SEEDLINGS

Dongjie Cui¹, Zhen Jiao¹, Ruonan Ma¹

1. Zhengzhou University

3P62 - Improved electrode configuration for the production of plasma activated water

Yun Sik Jin¹, Chuhyun Cho¹, HaChang-seung Ha, Chaehwa Shon, Daejong Kim, Seong-Tae Han

1. Korea Electrotechnology Research Institute

3P63 - Gas-phase active particles measurement of three typical atmospheric pressure plasma jets

Lanlan Nie, Fan Wu, Jiayin Li, Xinpei Lu

3P64 - Time-resolved ATR-FTIR to Reveal inactivation Kinetics of E. coli by Atmospheric DBD Plasma

Liyang Zhang¹, Hao Wang¹, Haiyun Luo¹, Xinxin Wang¹

1. Tsinghua University

3P65 - SURFACE DISCHARGE PLASMA INHIBITED THE BIOSYNTHESIS OF STAPHYLOXANTHIN IN STAPHYLOCOCCUS AUREUS

Yupan Zhu¹, Hangbo Xu¹

1. Plasma biomedicine

3P66 - PLASMA SOURCE FOR KILLING BACTERIA AND BIOFILMS ON SURFACES

Jim Browning¹, Kate Benfield¹, Tiffany Berntsen¹, Daniel Moyer¹, Spencer

Goering¹, Mariah Provost¹, Zeke Kennedy¹, Amanda White¹, Adam Croteau¹, Ryan Harper¹, Ken Cornell¹, Julia Oxford¹, Don Plumlee¹

1. Boise State University

3P67 - Comparison of atmospheric pressure plasma sources for biofilm decontamination

Martina Modic¹, Nataša Hojnik, James Walsh², Uros Cvelbar¹

1. Jozef Stefan Institute

2. University of Liverpool

3P68 - Investigation of bactericidal characteristics in packaged condition in high frequency high voltage pulse sterilization of food

Naoya Minemura¹, Masashi Kuwako¹, Kazuya Hoki¹, Hiromi Sato¹, Yasushi Minamitani¹, Aika Yokoi², Akira Nakono²

1. Yamagata University

2. Ichimasa Kamaboko Co., Ltd

3P69 - Consideration of sterilizing method for Stacked Pieces in Packaged Foods Using Pulsed Plasma

Katsunari Itakura¹, Daisuke Tsutsuji¹, Koki Saito¹, Yasushi Minamitani¹

1. Yamagata University

3P70 - Gold nanofluid synthesis using laser induced plasmas in liquids

Magesh Rajan¹

1. South Dakota School of Mines and Technology

3P71 - High Power Microwave Pulse Testing of Electronic Devices using Reverberating Chambers

Tomas Hurtig¹, Hanna Sundberg¹, Mattias Elfsberg¹, Sten Nyholm¹, Niklas Wellander²

1. Division of Defence & Security, Systems and Technology FOI – Swedish Defence Research Agency

2. Division of Command and Control Systems FOI – Swedish Defence Research Agency

3P72 - Reliable collisional radiative model for Zn laser produced plasma through electron impact fine structure resolved cross sections

Shivam Gupta¹, Reetesh Kumar Gangwar², Rajesh Srivastava¹

1. IIT Roorkee India

2. IIT Tirupati India

3P73 - Visible Spectroscopy Techniques for Diagnosing Plasmas in High-Energy-Density Power-Flow Systems

Mark D. Johnston¹, Sonal G. Patel¹, Michael E. Cuneo¹, E. Stambulchik², R. Doron², Yitzhak Maron²

1. Sandia National Laboratories

2. Weizmann Institute of Science

3P74 - Development of an LIF-dip system to measure electric field magnitude

Christopher Durot¹, Jenny Smith¹, John Foster¹

1. University of Michigan

3P75 - DIAGNOSTICS OF CAPACITIVE ENERGY STORAGE

Artur Gromov¹, Andrey Esafov², Boris Fridman¹, Alexey Ivanov¹, Stanislav

Karpikov², Vladimir Kuzmenkov¹, Andrey Pekhotny¹, Roman Ramazanov¹, Roman Serebrov¹, Anna Shalaeva¹

1. Efremov Institute of Electrophysical Apparatus

2. JSC "Avangard"

3P76 - Measurement on Electrical Conductivity of Exploding Copper Wire During Current Dwell Time

Sungbin Park¹, Kyoung-Jae Chung¹, Jong Hyeon Ryu¹, Kern Lee¹, Y. S. Hwang¹

1. Seoul National University

3P77 - A FREQUENCY RESPONSE TEST DEVICE FOR NANO-SECOND COAXIAL RESISTOR DIVIDER

Jiayin Yan¹, Weidong Ding, Yanan Wang¹, Saikang Shen¹, Lanxi Li¹, Zheng Zhongbo¹, Chongjian Ge¹

1. Xi'an Jiaotong University

3P78 - LUMPED PARAMETER MODEL AND ANALYSIS OF WIDE BAND RESISTANCE CAPACITANCE PARALLEL VOLTAGE DIVIDER FOR OVERVOLTAGE MONITORING

Kaisheng Mei, Jiayin Yan¹, Weidong Ding¹, Saikang Shen¹, shuo Chen

1. Xi'an Jiaotong University

3P79 - Design and calibration of a solenoid used on magnetized plasma experiments and of B-dot probes for measuring the strong magnetic fields using commercial electronic components

Raul Melean¹, Sallee Klein¹, Heath LeFevre¹, Jackson Williams², Mario Manuel³, Gregory Elijah Kemp², Derek Mariscal², Paul Campbell¹, Ryan McBride¹, Carolyn Kuranz¹

1. University of Michigan

2. Lawrence Livermore National Laboratory

3. General Atomics

3P80 - Diagnosis of Microwave Plasma Line for Plasma Enhanced Chemical Vapor Deposition

Chi Chen¹, Wenjie Fu¹, Xiaoyun Li¹, Yang Yan¹

1. University of Electronic Science and Technology of China

3P81 - Analysis of Cygnus Electrical Signals

Hoai-Tam (Tam) Truong¹, Keith Hogge¹, Michael Misch¹, John Smith², Michael Garcia³, Eugene Ormond³, Martin Parrales³

1. Mission Support and Test Services, LLC

2. Los Alamos National Laboratory

3. Sandia National Laboratories

3P82 - Exploring Signatures of Inner MITL Plasma Formation using Dedicated Experimental Platforms at the Z Pulsed Power Facility

George Laity¹, Carlos Aragon¹, Nichelle Bennett¹, David Bliss¹, Dan Dolan¹, Andrew Fierro¹, Matthew Gomez¹, Mark Hess¹, Brian Hutsel¹, Chris Jennings¹, Mark Johnston¹, Michael Kossow¹, Derek Lamppa¹, Clayton Myers¹, Sonal Patel¹, Andrew Porwitzky¹, Allen Robinson¹, David Rose², Eduardo Waisman¹, Tim Webb¹, Dale Welch², Michael Cuneo¹

1. Sandia National Laboratories

2. Voss Scientific

3P83 - Design of Ultra Wide Band Large Capacitance Load Pulse Source

Dongdong Huang¹, Jiangtao Li¹, Shuang He¹, Zheng Zhao¹, Longjie Li¹, Shuhan Liu¹, Jiarui Ren¹, Xinyun Zhang¹

1. Xi'an Jiaotong University

3P84 - Design and calibration of magnetic pick-up coil (B-dot) probes for measuring strong magnetic fields using commercial electronic components

Raul Melean¹, Jackson Williams², LeFevre Heath¹, Sallee Klein¹, Paul Campbell¹, Mario Manuel³, Gregory Elijah Kemp², Ryan McBride¹, Carolyn Kuranz¹

1. University of Michigan

2. Lawrence Livermore National Laboratory

3. General Atomics

3P85 - Z Line-VISAR: Spatially Resolved Load Current Diagnostic at the Z Pulsed Power Facility

David Bliss¹, Clayton Myers¹, K Austin², Jacob Baker¹, R Bettencourt², Erlan Bliss², J Celeste², Peter Celliers², T Clancy², S Cohen², Michael Crosley², Phil Datte², David Erskine², Duane Fratanduono², Gene Frieders², J Galbraith², James Hammer², Mark Hess¹, J Jackson², Christopher Jennings¹, Drew Johnson¹, Michael Jones¹, D Koen², J Lusk², A Martinez², W Massey², Thomas McCarville², Robert McDonald², H McLean², Kumar Raman², S Rodriguez², Decker Spencer¹, P Springer², Gene Vergel de Dios², J Wong²

1. Sandia National Laboratories

2. Lawrence Livermore National Laboratory

3P86 - Vacuum Ultraviolet Spectroscopy for Power Flow Studies on the 1 MA, 100 ns MAIZE LTD

Trevor Johannes Smith¹, Stephanie Miller¹, Paul Campbell¹, Jeff Woolstrum¹, Nicholas Jordan¹, George Laity², Ryan McBride¹

1. University of Michigan

2. Sandia National Laboratories

3P87 - Design and Performance of a 6 GHz Analog Optical Link

Matthew Lara¹, Jon Mayes¹

1. Applied Physical Electronics L.C.

3P88 - Design and Analysis on Coil Parameter of Linear Rogowski Coil for Measurement of High Frequency Pulsed Current

Kyoko Fujiwara¹, Fumihiro Tamura², Akira Tokuchi³, Kazumasa

Takahashi¹, Toru Sasaki¹, Takashi Kikuchi¹

1. Nagaoka University of Technology

2. National Institute of Technology, Nagaoka College / Nagaoka University of Technology

3. Pulsed Power Japan Laboratory Ltd. / Nagaoka University of Technology

3P89 - Investigation of the Structural, Thermal and Electrical Properties of Plasma Polymerized o-Methoxyaniline Thin Films

Md. Mehdi Masud¹, Md. Abu Hashan Bhuiyan², David A. Strubbe³

1. Graduate Student

2. Professor of Physics

3. Assistant Professor of Physics

3P90 - 2016 Cygnus Refurbishment

Steve Huber¹, Bill Skarda¹, PAUL FLORES¹, Isidro Molina², Monty Larsen¹, Keith Hogge¹, John Smith³, Mike Garcia⁴, Eugene Ormond⁴, Stephen Mitchell¹, Nichele Prock¹, Joe Delash¹

1. Mission Support and Test Services, LLC

2. Keystone International

3. Los Alamos National Laboratory

4. Sandia National Laboratories

Session: 6A

1.2 Computational Plasma Physics III

Wednesday 15:30 Room: Seminole A/B

Session Chair: Christine Roark

15:30 - 6A1 - Sparse Grid Discontinuous Galerkin Methods for the Vlasov-Maxwell System

Zhanjing Tao¹, Wei Guo², Yingda Cheng¹

1. Michigan State University

2. Texas Tech University

15:45 - 6A2 - A Kernel Based High Order "Explicit"

Unconditionally Stable Constrained Transport Method for Ideal

Magnetohydrodynamics

FIRAT CAKIR¹, Andrew Christlieb¹, YAN JIANG²

1. MICHIGAN STATE UNIVERSITY

2. University of Science and Technology of China

16:00 - 6A3 - Convergence Ratio Effects on Ultra-thin Foil Liner Implosion and Explosion Stability

Jeff Woolstrum¹, David Yager-Elorriaga², Paul Campbell¹, Stephanie Miller¹, N. M. Jordan³, Charles Seyler⁴, Ryan McBride¹

1. University of Michigan

2. Sandia National Laboratories

3. University of Michigan, Ann Arbor, MI 48109, USA

4. Cornell University

16:15 - 6A4 - (invited) Multi-Species Plasma-Electromagnetic Models for Pulsed Power Applications

Kris Beckwith¹

1. Sandia National Laboratories

16:45 - 6A5 - Using Coupled Dust Motion to Analyze Plasma-Dust Interactions

Lorin Matthews¹, Dustin Sanford¹, Peter Hartmann², Marlene Rosenberg³, Eva Kostadinova¹, Truell Hyde¹

1. Baylor University

2. Wigner Research Centre for Physics

3. University of California at San Diego

17:00 - 6A6 - Statistics and Propagation Modeling of Atmospheric Lightning

William Brooks¹, David Barnett¹, John Mankowski¹, James Dickens¹, W. A. Harrison², David Hattz², Andreas Neuber¹

1. Texas Tech University

2. CNS Pantex

17:15 - 6A7 - Numerical model of acoustic wave generated by free-burning AC arc

Chen Zhe¹, Li Handong, Wang Xinxin

1. Tsinghua University

Session: 6B

4.6 Fast Z Pinches II

Wednesday 15:30 Room: Seminole D/E

Session Chair: Farhat Beg

15:30 - 6B1 - (invited) Investigating Ion Energy Partitioning in Gas-puff Z-pinches with Thomson Scattering

Sophia Rocco¹, Jacob Banasek¹, E. Sander Lavine¹, William Potter¹, David Hammer¹

1. Cornell University

16:00 - 6B2 - Implosion dynamics and magneto-Rayleigh-Taylor instability in gas-puff z-pinch experiments at 1-MA

E. Sander Lavine¹, Sophia Rocco¹, William Potter¹, Jacob Banasek¹, Thomas Hentschel¹, Niansheng Qi¹, John Greenly¹, Dave Hammer¹, Bruce Kusse¹

1. Cornell University

16:15 - 6B3 - Time-Dependent Helical Magnetic Field Effects on Cylindrical Liner Implosions

Paul Campbell¹, Tanner Jones¹, Jeff Woolstrum¹, Nick Jordan¹, John Greenly², William Potter², E. Sander Lavine², Charles Seyler², Bruce Kusse², Dave Hammer², Ryan McBride¹

1. University of Michigan

2. Cornell University

16:30 - 6B4 - HIGH VOLTAGE COAXIAL VACUUM GAP BREAKDOWN FOR PULSED POWER LINERS

Sam Cordaro¹, Simon Bott-Suzuki¹, Levon Atoyan², Tom Byvank², William Potter², Bruce Kusse², John Greenly²

1. University of California, San Diego

2. Cornell University

16:45 - 6B5 - Characterization of Slow Current Driven X-pinch based X-ray Source

Sanjay Andola¹, Jigyasa Batra¹, Ashutosh Jaiswar¹, Alok Kumar Saxena¹, Trilok Chand Kaushik¹

1. Applied Physics Division, Bhabha Atomic Research Centre, Mumbai

17:00 - 6B6 - Investigation on the early stage plasma instabilities in magnetized cylindrical liners

Guanqiong Wang¹, Xiaoguang Wang¹, Delong Xiao¹, Yang Zhang¹, Ning Ding¹, Chongyang Mao¹, Shunkai Sun¹, Chuang Xue¹, Xiaojian Shu¹

1. Institute of applied physics and computational mathematics

17:15 - 6B7 - Numerical study on magneto-Rayleigh-Taylor instabilities for thin liner implosions on the PTS facility

Xiao-guang Wang¹, Shun-kai Sun, De-long Xiao, Guan-qiong Wang, Yang Zhang, Shao-tong Zhou, Xiao-dong Ren, Qiang Xu, xian-bin Huang, Ning Ding, Xiaojian Shu

1. Institute of Applied Physics and Computational Mathematics, Beijing 100088, China

Session: 6C

2.7 Microwave Plasma Interaction III

Wednesday 15:30 Room: Gold Coast III/IV

Session Chair: John Leopold

15:30 - 6C1 - (invited) The interaction of a high-power sub-nanosecond microwave pulse with preliminarily formed plasma in a waveguide

Yang Cao¹, John Leopold¹, Y. P. Bliokh¹, Ya.E. Krasik¹, Vladislav Rostov²

1. Technion - Israel Institute of Technology

2. Institute of High Current Electronics

16:00 - 6C2 - The Experimental Study of Time Resolved Inductively Coupled Plasma for Fast Control of High Power Millimeter-wave

Mun Seok Choe¹, Ashwini Sawant¹, Ingeun Lee¹, Wonjin Choi¹, Hong Eun Choi¹, Taegyu Han¹, EunMi Choi¹

1. Ulsan National Institute of Science and Technology (UNIST)

16:15 - 6C3 - Theoretical investigation of a novel microwave driven ICP plasma jet

Michael Klute¹, Horia-Eugen Porteanu², Ilija Stefanovic³, Nikita Bibinov¹, Wolfgang Heinrich⁴, Peter Awakowicz³, Ralf Peter Brinkmann⁵

1. Ruhr University

2. Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenzte

3. Ruhr-Universität Bochum, Faculty of Electrical Engineering and Information Technology, Institute for Electrical Engineering and Plasma Technology, Germany

4. Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik, Berlin, Germany

5. Ruhr University Bochum

16:30 - 6C4 - Inductively Coupled Plasma at Atmospheric Pressure, a Challenge for Miniature Devices

Horia-Eugen Porteanu¹, Ilija Stefanovic², Bibinov Nikita², Michael Klute³, Peter Awakowicz², Ralf-Peter Brinkmann³, Wolfgang Heinrich⁴

1. Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenzte

2. Ruhr-Universität Bochum, Faculty of Electrical Engineering and Information Technology, Institute for Electrical Engineering and Plasma Technology, Germany

3. Ruhr-Universität Bochum, Faculty of Electrical Engineering and

Information Technology, Institute for Theoretical Electrical Engineering, Germany

4. Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik, Berlin, Germany

16:45 - 6C5 - VARIABLE-FREQUENCY CAPACITIVELY COUPLED PLASMA AS A TUNABLE RF ELEMENT

Andrei Khomenko¹, Sergey Macheret¹

1. Purdue University

17:00 - 6C6 - Modeling a microwave plasma enhanced chemical vapor deposition system using finite element method

Yilang Jiang¹, Kaviya Aranganadin¹, Ming-Chieh Lin¹, Jing-Shyang Yen², Hua-Yi Hsu²

1. Hanyang University

2. National Taipei University of Technology

17:15 - 6C7 - Toward a Wideband and High-Isolation Power Limiter

Abbas Semnani¹, Zach Vander Missen¹, Dimitrios Peroulis¹

1. Purdue University

Session: 6D

5.1 & 5.2 Opening and Closing Switches II

Wednesday 15:30 Room: Space Coast I-III

Session Chair: Jason Sanders

15:30 - 6D1 - Nanosecond Rise-time, Laser Diode Driven, Wide Bandgap Photoconductive Switches as Fast, High-Voltage MOSFET Replacements for Bioelectrics and Accelerator Applications

Stephen Sampayan¹, Kristin Sampayan¹

1. Opcondys, Inc.

15:45 - 6D2 - Laser triggered solid state pulse charging system utilizing GaAs PCSS technology

Nathan Zamerowski¹, Jonathan Parson¹, John Krile¹, Ricky Rodriguez¹, Josh Grimes¹, Charlie Anderson¹, Andreas Neuber², Jim Dickens², Jeff Pierce³

1. Scientific Applications and Research Associates

2. Texas Tech University

3. Systems Optical

16:00 - 6D3 - Performance Comparison of Commercial GaN HEMT under Repetitive Overcurrent Operations

Jose Rodriguez¹, Matthew Kim¹, Stephen Bayne¹, Heather O'Brien², Aderinto Ogunniyi²

1. Texas Tech University

2. Army Research Laboratory

16:15 - 6D4 - Analysis of a New 15-kV SiC n-GTO under Pulsed Power Applications

Matthew Kim¹, Tsz Tsoi¹, Jonathan Forbes¹, Stephen Bayne¹, Heather O'Brien², Aderinto Ogunniyi², Sei-Hyung Ryu³

1. Texas Tech University

2. Army Research Laboratory

3. WolfSpeed

16:30 - 6D5 - Improving Fast SiC MOSFET Switching Using an Inductive Gate Drive Approach

Micah LaPointe¹, Landon Collier¹, James Dickens¹, John Mankowski¹, Andreas Neuber¹

1. Texas Tech University

16:45 - 6D6 - Switching Characterization of Multi-gap and Multi-aperture High Power Pseudospark Switch (PSS)

Udit Narayan Pal¹, Mohit Kumar Verma², B. L. Meena³, Ram Prakash

Lamba³, Klaus Frank⁴

1. CSIR-Central Electronics Engineering Research Institute, Pilani, India

2. Electrical Engineering Department, National Institute of Technology (NIT), Calicut-673601, India

3. Microwave Devices Area, CSIR- Central Electronics Engineering Research Institute (CEERI), Pilani, Rajasthan-333031, India

4. Department of Physics, Friedrich-Alexander-University (FAU), Erlangen, D-91058, Germany

17:00 - 6D7 - DEPENDENCE OF TRIGGER PULSE PARAMETERS ON CURRENT QUENCHING IN PSEUDOSPARK DISCHARGE

Jiaqi Yan¹, Saikang Shen¹, Weidong Ding¹, Lanxi Li¹

1. Xi'an Jiaotong University

17:15 - 6D8 - GTO Like Thyristors Triggered in Impact-Ionization Wave Mode

Thomas Kramer¹, Sergei Lyubutin², Viliam Senaj¹, Boris Slovikovsky², Anton Gusev², Sergei Rukin², Vitaly Patrakov², Michael Barnes¹

1. CERN

2. Institute of Electrophysics UB RAS

Session: 6E

6.4 Environmental, Industrial, and Display Applications I

Wednesday 15:30 Room: Seminole C

Session Chair: Juergen Kolb

15:30 - 6E1 - (invited) Three Decades of Pulsed Power Development for Rock Fracturing and Associated Applications

Steven Pronko¹, William Moeny¹

1. Tetra Corporation

16:00 - 6E2 - Enhancement of shock wave from underwater electrical wire explosion by replacing one thicker wire with many thinner wires

Dun Qian¹, Liuxia Li¹, Xiaobing Zou¹, Xinxin Wang¹

1. Tsinghua University

16:15 - 6E3 - Modification of the functional surface cover, structural defects and technological properties of natural diamonds under the nonthermal influence of repetitive high-power nanosecond pulses

Igor Bunin¹, Nataliya Anashkina¹

1. Institute of Comprehensive Exploitation of Mineral Resources of the Russian Academy of Science

16:30 - 6E4 - Efficiency of rock destruction by a pulse generator based on a linear pulse transformer

Ivan Lavrinovich¹, Denis Molchanov¹

1. HCEI SB RAS

16:45 - 6E5 - Computational Study of a Pulsed Power Source based Electromagnetic Manufacturing Process

DEEPAK KAUSHIK¹, M. Joy Thomas²

1. IISc Bangalore

2. Indian Institute of Science

17:00 - 6E6 - Characteristics of Near-Field Shockwaves Induced by Underwater Pulsed Discharges

Liangli Xiong¹, Yi Liu¹, Mingan Wu², Fuchang Lin¹, Yuan Pan¹, Siwei Liu¹

1. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, School of Electrical and Electronic Engineering, Huazhong University of Science & Technology, Wuhan, Hubei Province, China

2. School of Electrical Engineering and Automation, Wuhan University, Wuhan, Hubei Province, China

**17:15 - 6E7 - Impact Velocity Control for Electromagnetic Pulse
Welding Based on Modular Discharge Current Shaping**
Yan Zhou¹, Chengxiang Li, Jian Du, Xianmin Wang, Zhigang Liao
1. *Chongqing University*

Session: 6F

8.2 Generators and Networks and 8.3 Repetitive Systems

Wednesday 15:30 Room: Gold Coast I/II
Session Chair: Brett Huhman

15:30 - 6F1 - A high-repetition rate, magnetic core, pulse transformer based, fast 120 kV generator

Jessica Stobbs¹, Bucur Novac¹, Peter Senior¹, Tom Huiskamp, Frank
Beckers², Guus Pemen²
1. *Loughborough University*
2. *Eindhoven University of Technology*

15:45 - 6F2 - AN ALTERNATIVE CIRCUITRY FOR A TRANSFORMER COUPLED LC INVERSION GENERATOR

Rainer Bischoff¹
1. *French-German Research Institute of Saint-Louis (ISL)*

16:00 - 6F3 - A 30kV, 200kHz Solid-state Pulsed Power Generator Based on the Drift Step Recovery Diodes

wang haiyang¹
1. *Xi'an jiaotong university*

16:15 - 6F4 - (invited) 8-Stage Pulse Generator for Generation of Bipolar Rectangular Pulses

Martin Sack¹, Dennis Herzog², Martin Hochberg¹, Georg Mueller²
1. *Karlsruhe Institute of Technology*
2. *Institute for Pulsed Power and Microwave Technology (IHM), Karlsruhe
Institute of Technology (KIT), Germany*

16:45 - 6F5 - A Novel High-frequency Pulse Generator Based on Bipolar and Marx Topologies

Shoulong Dong¹, liang Yu, Jianhao Ma, Xiaoyu Wang, hongmei liu¹,
Chenguo Yao
1. *Chongqing University*

17:00 - 6F6 - Design and Performance of a 2 m EUT MIL STD 461 (RS-105) Test System

Jon Mayes¹, Bill Nunnally¹, Eric Perry¹, Matthew Lara¹, Chris Hatfield¹,
Jeremy Byman¹, David Kohlenberg¹, Paul Flores¹, Tim Henke¹, Stephane
Del Rosario¹
1. *Applied Physical Electronics L.C.*

17:15 - 6F7 - Dynamic Modeling of Pulsed Alternators using LTspice

Cesar Negri¹, Saeed Daneshvardehnavi¹, Michael Giesselmann¹
1. *Texas Tech University*

Thursday AM

Session: 6Plenary

Plenary Thurs - Thomas Mehlhorn (2019 Peter Haas Award)

Thursday 8:30 Room: Seminole Ballroom

Session Chair: Ron Gilgenbach (2017 Peter Haas Award)

Pulsed Power as a Science: Predictive simulations for beams, z-pinches, and other applications

Tom Mehlhorn¹

1. Naval Research Laboratory

Session: 7A

3.2 Intense Electron and Ion Beams

Thursday 10:00 Room: Gold Coast I/II

Session Chair: Peng Zhang

10:00 - 7A1 - USE OF HERMES-III FOR PULSED NEUTRON PRODUCTION PRODUCED BY INTENSE ION BEAMS AT THE 14 MEV LEVEL AT SANDIA NATIONAL LABORATORIES

Timothy Renk¹, Paul Ottinger², Russell Durrer³

1. Sandia National Laboratories

2. Syntek Technologies

3. Sigma Science, Inc.

10:15 - 7A2 - Thermionic and Field emission model of 2D materials cathode

Lay Kee ANG¹, Yee Sin ANG¹

1. Singapore University of Technology and Design

10:30 - 7A3 - INCORPORATING RESISTANCE INTO THE UNIFICATION OF FIELD EMISSION AND SPACE CHARGE-LIMITED EMISSION WITH COLLISIONS

Adam Darr¹, Amanda Loveless¹, Allen Garner¹

1. Purdue University

10:45 - 7A4 - Exact Solution for Two-Color Laser Induced Photoemission from a Biased Metal Surface

Yi Luo¹, Peng Zhang¹

1. Michigan State University

11:00 - 7A5 - Shocks induced by fast high-fluence electron beam deposition on Aluminum targets: hydrodynamic simulations initialized by electron beam measurements.

Nicolas Szalek¹, Béatrice Bicrel¹, Bruno Cassany¹, Alain Galtié¹, Jacques Gardelle¹, David Hébert

1. CEA

11:15 - 7A6 - Optical Imaging of the Self Magnetic Pinch Diode on the Merlin IVA

Mark Sinclair¹, Andrew Blackwood¹, Matt Childs¹, David George¹, James Threadgold¹

1. AWE

11:30 - 7A7 - The effective way of improving the performance of a novel multipacting cathode with high current density

Ye Dong¹, Qingxiang Liu², Xiangqiang Li², Haijing Zhou³, Zhiwei Dong³

1. School of Physical Science and Technology, Southwest Jiaotong University, Chengdu, China; 2. Institute of Applied Physics and

Computational Mathematics, Beijing, China

2. School of Physical Science and Technology, Southwest Jiaotong

University, Chengdu, China

3. Institute of Applied Physics and Computational Mathematics, Beijing, China

11:45 - 7A8 - Generation of Intense Pulsed X-ray and Repetitive Pulsed X-rays

Jianqiang Yuan¹, Weiping Xie¹, Lidong Geng¹, Hongwei Liu¹, Lingyun

Wang¹, Hongtao Li¹, Xun Ma¹, Ping Jiang¹

1. Institute of Fluid Physics, China Academy of Engineering Physics

Session: 7B

2.3 Slow-Wave Devices

Thursday 10:00 Room: Seminole A/B

Session Chair: Nick Jordan

10:00 - 7B1 - Experimental Study of a Millimeter Wave Relativistic Backward Wave Oscillator

Ahmed Elfrgani¹, Firas Ayoub¹, Artem Kuskov, Dmitrii Andreev¹, Antonio

De Alleluia¹, Braulio Martinez-Hernandez¹, Kevin Wang Huang¹, Stacie

Hernandez¹, Edl Schamiloglu¹

1. University of New Mexico

10:15 - 7B2 - Multiple Beam Power Grid Tubes for High Frequency and High Power Operation

Lawrence Ives, Michael Read¹, David Marsden¹, Thuc Bui¹, Ricky Ho²,

Leroy Higgins², Bruce Henderson²

1. Calabazas Creek Research, Inc.

2. Communications & Power Industries, LLC

10:30 - 7B3 - A 1.3 GHz 100 kW Ultra-High Efficiency Klystron

Michael Read¹, Lawrence Ives, Jeff Neilson², Aaron Jensen³

1. Calabazas Creek Research, Inc.

2. SLAC National Accelerator Laboratory

3. Leidos Corporation

10:45 - 7B4 - COAXIAL-ALL-CAVITY-EXTRACTION ON THE HARMONIC RECIRCULATING PLANAR MAGNETRON

R. M. Gilgenbach¹, Geoffrey Greening¹, Christopher Swenson¹,

Nick Jordan¹, Brad Hoff², Drew Packard¹, Y. Y. Lau¹, Jason Hammond²,

Steven Exelby¹

1. University of Michigan

2. Air Force Research Laboratory

11:00 - 7B5 - Inclusion of Circuit Loss in an Exact Treatment of a Helix Traveling Wave Tube

Abhijit Jassem¹, Yue Ying Lau¹

1. University of Michigan

11:15 - 7B6 - MODELING STABILITY OF VACUUM ELECTRONIC DEVICES USING GENERALIZED IMPEDANCE MATRIX APPROACH

Igor Chernyavskiy¹, Alexander Vlasov¹, John Rodgers¹, Baruch Levush¹,

Thomas, Jr. Antonsen²

1. Naval Research Laboratory

2. Leidos, Inc.

11:30 - 7B7 - An Electron Gun for a Sheet Beam with a 3 to 1 Aspect Ratio: Design and Optimization

Alex Burke¹, Aaron Jensen¹, John Petillo¹, John Pasour²

1. Leidos

2. US Naval Research Laboratory

11:45 - 7B8 - W-band 2D Periodic Lattice Oscillator

colin whyte¹, Amy MacLachlan², Craig W. Robertson¹, Adrian Cross¹,
Liang Zhang¹, Alan Phelps¹, Kevin Ronald¹
1. *University of Strathclyde*
2. *University of Strathclyde / Cockcroft Institute*

Session: 7C

4.4 High Energy Density Matter

Thursday 10:00 Room: Gold Coast III/IV

Session Chair: Sergey Pikuz

10:00 - 7C1 - (invited) A Study of Magnetized Jet Stability Using High Energy Density Plasmas

Hannah Hasson¹, Pierre Gourdain¹, Marissa Adams¹, Dave Hammer², Bruce Kusse², Roman Shapovalov¹, James Young¹, Matt Evans¹, John Greenly², Imani West-Abdallah¹

1. *University of Rochester*
2. *Cornell University*

10:30 - 7C2 - Thomson Scattering Measurements of Bow-shocks in Radiatively-cooled Magnetically Accelerated Plasma Flows

Simon Bott-Suzuki¹, Sam Cordaro¹, Tobias Oliver¹, William Potter², Jacob Banasek², Sophia Rocco², Bruce Kusse², Dave Hammer²

1. *University of California San Diego*
2. *Cornell University*

10:45 - 7C3 - An absorption spectroscopy platform to measure photoionization fronts in the laboratory

Heath LeFevre¹, William Gray¹, Joshua Davis¹, Paul Keiter², Carolyn Kuranz¹, R Paul Drake¹

1. *University of Michigan*
2. *Los Alamos National Laboratory*

11:00 - 7C4 - (invited) Nernst Thermomagnetic Waves in Magnetized High Energy Density Plasmas

Alexander Velikovich¹, John Giuliani², Steven Zalesak³

1. *Naval Research Laboratory*
2. *Plasma Physics Division, Naval Research Laboratory*
3. *Syntek Technologies*

11:30 - 7C5 - Electrical explosions of cylindrical wire arrays in different materials

David Yanuka¹, Savva Theocharous¹, Simon Bland¹, Ya.E. Krasik²

1. *Imperial College London*
2. *Technion*

11:45 - 7C6 - Exploring Properties of Warm Dense Matter Using Microsecond Timescale Pulse Power Drive

Robert Reinovsky¹, christopher rousculp¹, Sergey Garanin², Sergey Kuznetsov²

1. *Los Alamos National Laboratory*
2. *RFNC - VNIIEF*

Session: 7D

6.1 Nonequilibrium Plasma Applications II

Thursday 10:00 Room: Seminole C

Session Chair: James Walsh

10:00 - 7D1 - (invited) Nanosecond-pulsed corona discharge in liquid nitrogen and production of nitrogen polymers

Danil Dobrynin¹, Roman Rakhmanov¹, Alexander Fridman¹

1. *Drexel university*

10:30 - 7D2 - Investigation of Atmospheric Pressure Plasma Jet in Double Coaxial Dielectric Barrier Tubes Conjugated with

Microsecond Voltage Pulse

Duc Ba Nguyen¹, Md. Mokter Hossain², Van Toan Nguyen², Young Sun

Mok², Quang Hung Trinh³, Won Gyu Lee⁴

1. *Department of Chemical and Biological Engineering, Jeju National University*
2. *Jeju National University*
3. *Duy Tan University*
4. *Kangwon National University*

10:45 - 7D3 - A Comparison between Ag/ZSM5 and Cu/ZSM5 Catalysts Coupled with Plasma in Hydrocarbon Catalytic Reduction of NOx at Low-Temperatures

Van Toan Nguyen¹, Duc Ba Nguyen, Md. Mokter Hossain, Young Sun Mok

1. *Department of Chemical and Biological Engineering, Jeju National University*

11:00 - 7D4 - Nanosecond-pulsed oxygen DBD treatment of water and production of "plasma acid"

Ryan Robinson¹, Alexander Fridman¹, Danil Dobrynin¹

1. *Drexel University*

11:15 - 7D5 - Supported vanadium oxides modified by non-thermal plasma for nitrogen fixation

Rim Bitar¹, Moazameh Adhami Sayad Mahaleh¹, Anton Nikiforov¹, Karen Leus¹, Pascal Van Der Voort¹, Rino Morent¹, Nathalie De Geyter¹

1. *Gent University*

11:30 - 7D6 - Study of plasma catalyst interactions by time resolved diffuse reflectance infrared Fourier transform spectroscopy

Shiqiang Zhang¹, Yudong Li¹, Andrew Knoll¹, Jinkai Jiang², Peter

1. *University of Maryland, College Park*
2. *University of Minnesota*

11:45 - 7D7 - Multispecies Nonequilibrium Plasma Fluid Simulation of an Ablating Arc Discharge in Atmospheric Pressure

Adnan Mansour¹, Kentaro Hara¹

1. *Texas A&M University*

Session: 7E

7.4 Linear Tranformer Driver

Thursday 10:00 Room: Seminole D/E

Session Chair: Frederic Bayol

10:00 - 7E1 - (invited) The developments of Linear Transformer Drivers in Xi'an Jiaotong University

Jian Wu¹, Fengju Sun², Xingwen Li¹, Aici Qiu¹, Xiaofeng Jiang², Zhiguo Wang², Hongyu Jiang², Huantong Shi¹, Li Chen¹, Penghui Li¹

1. *Xi'an Jiaotong University*
2. *Northwest Institute of Nuclear Technology*

10:30 - 7E2 - Experimental results from the the 1.2 MA, 2.2 m diameter linear transformer driver cavity at Sandia National Labs

Jon Douglass¹, Brian Hutsel¹, Josh Leckbee¹, Brian Stoltzfus¹, Matthew Wisner¹, Mark Savage¹, William Stygar¹, Eric Breden¹, Jacob Calhoun¹, Michael Cuneo¹, Owen Johns¹, Michael Jones¹, Diego Lucero¹, James Moore¹, Matthew Sceiford¹, Mark Kiefer¹, Thomas Mulville¹, Robert Hohlfelder¹

1. *Sandia National Laboratories*

10:45 - 7E3 - Low-Inductance Load Test of a New 300-kA, 150-ns Pulser for Fast X-Pinch Sources

Roman Shapovalov¹, Marissa Adams¹, Matt Evans¹, Hannah Hasson¹,

James Young¹, Imani West-Abdallah¹, Pierre Gourdain¹
1. *University of Rochester*

11:00 - 7E4 - Current adding strategies in compact linear transformer drivers

Pierre Gourdain¹, Marissa Adams¹, Matt Evans¹, Hannah Hasson¹, Roman Shapovalov¹, James Young¹, Imani West-Abdallah¹, Rick Spielman²
1. *University of Rochester*
2. *Idaho State University*

11:15 - 7E5 - New type of capacitor-switch assembly for LTD technology

Ivan Lavrinovich¹, Semen Vagaytsev¹, Aleksander Erfort¹, Dmitry Rybka¹, Denis Molchanov¹, Anton Artemov¹, Alexander Zhigalin¹, Aleksander Lensky¹
1. *Institute of High Current Electronics SB RAS, Tomsk, Russia*

11:30 - 7E6 - The Development of all-solid pulse generator based on multi-turn LTD

shoulong dong¹, Jianhao Ma¹, yilin wang, weirong zeng, Chenguo Yao
1. *Chongqing University*

11:45 - 7E7 - Construction of the BLUE Linear Transformer Driver (LTD) at University of Michigan

Brendan Sporer¹, Ryan McBride¹, Nick Jordan¹
1. *University of Michigan*

Session: 7F

8.1 Electromagnetic Launch

Thursday 10:00 Room: Space Coast I-III

Session Chair: Mark Crawford

10:00 - 7F1 - (invited) ASELSAN Electromagnetic Launch Laboratory: First Shot

Mustafa Karagoz¹, Baran Yildirim, Emre Burak Yurdakul, Emre Durna, Ozgur Cavbozar, Ulas Gocmen, Evren Tan, Yasin Cevik, Anil Civil
1. *ASELSAN*

10:30 - 7F2 - Numerical Analysis of the Magnetic Expansion Force on the Solenoid Coil in a Four-stage Induction Coilgun with Pulsed Power Supplies

Myung-Geun Song¹, Hui Min Kim¹, Yong Kyu Lee¹
1. *Launcher Systems R&D Center; Research Institute, Hanwha Defense Corporation*

10:45 - 7F3 - Investigations on the Energy Chain supporting a Naval Railgun

Stephan Hundertmark¹
1. *ISL*

11:00 - 7F4 - Magnetic Shielding Effectiveness of Layered Medium-Walled Structures

Tyler Buntin¹, Landon Collier¹, Colt James², James Dickens¹, John Mankowski¹, Andreas Neuber¹
1. *Texas Tech University*
2. *Raytheon*

11:15 - 7F5 - Factors Influencing the Efficiency of an Induction Coilgun

Ranashree Ram¹, Chiranjeev S. Sirola², M. Joy Thomas²
1. *IISc Bangalore*
2. *Indian Institute of Science Bangalore*

11:30 - 7F6 - Flyer Acceleration using Underwater Wire Explosions

Savva Theocharous¹, David Yanuka², Simon Bland¹, Luis Sebastian

Caballero Bendixsen

1. *Imperial College London*
2. *Technion - Israel Institute of Technology*

11:45 - 7F7 - Design and Electromagnetic Analysis of a Multi-Stage Induction Coilgun System for Heavy Projectile

Byeong-Soo Go¹, Dinh-Vuong Le¹, Myung-Geun Song², Minwon Park¹, In-Keun Yu¹
1. *Changwon National University*
2. *Hanwha Defense Corporation*

Thursday PM

Session: 8A

1.5 Dusty Plasmas and Strongly Coupled Plasmas

Thursday 13:30 Room: Gold Coast III/IV

Session Chair: Lorin Matthews

13:30 - 8A1 - (invited) Nonlinear Structures Under The Influence Of Polarization Force In Non-Maxwellian Dusty Plasma

Nareshpal Singh Saini¹
1. *Guru Nanak Dev University, Amritsar*

14:00 - 8A2 - Some properties of ion-acoustic and dust-acoustic instabilities in non-Maxwellian space plasmas

Warda Nasir¹, M N S Qureshi²
1. *Forman Christian College*
2. *GC University, Lahore*

14:15 - 8A3 - Field-Aligned Chains within the PK-4 Environment

Truell Hyde¹, Lorin Matthews¹, Peter Hartmann², Marlene Rosenberg³, Oleg Petrov⁴, Vladimir Nosenko⁵, Jie Kong¹, Ke Qiao¹, Eva Kostadinova¹, Jorge Carmona-Reyes¹
1. *CASPER - Baylor University*
2. *Wigner Research Centre for Physics, Budapest, Hungary*
3. *University of California at San Diego*
4. *Joint Institute for High Temperatures, Russian Academy of Sciences*
5. *DLR Institute of Materials Physics in Space*

14:30 - 8A4 - Plasma Kristall-4: Anomalous diffusion and vorticity in a multi-chain dusty plasma

Evdokiya Kostadinova¹, Joshua Padgett², Constanze Liaw³, Peter Hartmann⁴, Marlene Rosenberg⁵, Lorin Matthews¹, Truell Hyde¹
1. *Baylor University*
2. *Texas Tech University*
3. *University of Delaware*
4. *Hungarian academy of sciences*
5. *University of California at San Diego*

14:45 - 8A5 - The effect of variable dust size and charge on the propagation of rogue waves in magnetized solar wind dusty plasma

Atef Elbendary¹
1. *Assistant Professor at Egypt*

15:00 - 8A6 - Dust-ion acoustic travelling waves and chaos in a magneto-rotating dusty plasma

YASHIKA GHAI¹, Barjinder Kaur, N.S. Saini¹
1. *Guru Nanak Dev University*

15:15 - 8A7 - Dust Acoustic Kinetic Alfven Waves In The Presence Of superthermally Trapped Ions in polarized dusty plasma

KULDEEP SINGH¹, NIMARDEEP KAUR¹, N. S. SAINI²

1. Guru Nanak Dev University, Amritsar, India-143005

2. Department of physics, Guru Nanak Dev University

Session: 8B

2.5 Codes and Modeling and 2.8 THz Sources, Radiation, and Applications

Thursday 13:30 Room: Seminole A/B

Session Chair: Ian Rittersdorf and Timothy Haugan

13:30 - 8B1 - Least-Square Weighted Residual Methods for Solution of Global Model Equations

Sergey Averkin¹, Tom Jenkins¹

1. Tech-X Corporation

13:45 - 8B2 - Low-Impedance S-Band MILO

Matthew Abide¹, Tyler Buntin¹, James Dickens¹, Andreas Neuber¹, Ravi Joshi¹, John Mankowski¹

1. Texas Tech University

14:00 - 8B3 - COMPUTER SIMULATION AND THE PHYSICS OF MIRAM CURVES

John Petillo¹, David Chernin¹, Y. Y. Lau², Serguei Ovtchinnikov¹, Aaron Jensen¹

1. Leidos

2. University of Michigan, Ann Arbor, MI 48109, USA

14:15 - 8B4 - A Model of Thermal-Field Current from Microscopic Structures

John Petillo¹, Kevin Jensen², Michael McDonald², Serguei Ovtchinnikov¹, Aaron Jensen¹

1. Leidos

2. Naval Research Laboratory

14:30 - 8B5 - Laser-Driven Semiconductor Switch for Generating Nanosecond Pulses from a Megawatt Gyrotron

Julian Picard¹, Samuel Schaub¹, Guy Rosenzweig¹, Jacob Stephens¹, Michael Shapiro¹, Richard Temkin¹

1. Massachusetts Institute of Technology

14:45 - 8B6 - THz Wakefield Source Powered by Nonrelativistic Electron Beam

Mitchell Schneider¹, Stanislav Baturin², Sergey Baryshev¹

1. Department of Electrical and Computer Engineering, Michigan State University

2. PSD Enrico Fermi Institute, University of Chicago

15:00 - 8B7 - THz Structures for MeV Electron Bunch Compression

Mohamed Othman¹, Emma Snively¹, Michael Kozina¹, Benjamin Ofori-Okai¹, Suji Park¹, Xiaozhe Shen¹, Stephen Weathersby¹, Charles Yoneda¹, Xijie Wang¹, Matthias Hoffmann¹, Renkai Li¹, Emilio Nanni¹

1. SLAC National Accelerator Laboratory

15:15 - 8B8 - A cold-cathode magnetron gun in plasma mode as driver for a THz generator

Sergiy Cherenshchykov, Sergiy Cherenshchykov

Session: 8C

4.3 Radiation Physics & X-ray Lasers and 4.5 Laser Produced Plasmas

Thursday 13:30 Room: Gold Coast I/II

Session Chair: Jennifer Elle

13:30 - 8C1 - (invited) NO PLIF flow visualization and time-resolved temperature distribution measurements in laser induced breakdown plumes

Dirk van den Bekerom¹, Elijah Jans¹, Igor Adamovich¹

1. The Ohio State University

14:00 - 8C2 - Physical Experiments on the HEAVEN-I KrF Laser Facility

ZHAO WANG¹

1. China Institute of Atomic Energy

14:15 - 8C3 - FEATURES OF LASER PRODUCED ANNULAR PLASMAS USING DIFFERENT TARGET MATERIALS AND AMBIENT CONDITIONS

Mario Favre¹, Fabián Velásquez¹, Diego Oportus¹, Heman Bhuyan¹, Felipe Veloso¹, Julio Valenzuela¹, Edmund Wyndham¹

1. Instituto de Física, Pontificia Universidad Católica de Chile

14:30 - 8C4 - (invited) High-brightness X-ray undulator radiation from ultra-short electron beams

David Bruhwiler¹, Boaz Nash², Oleg Chubar³, Nicholas Goldring¹, Paul Moeller¹, Maksim Rakitin³, Robert Nagler¹

1. RadiaSoft LLC

2. European Synchrotron Radiation Facility

3. Brookhaven National Laboratory

15:00 - 8C5 - TIME EVOLUTION OF HARD X-RAY CHARACTERISTIC EMISSION FROM TUNGSTEN PULSED-POWER PLASMAS

Alla Safronova¹, Victor Kantsyrev¹, Austin Stafford¹, Ishor Shrestha¹, Veronica Shlyaptseva¹, Ryan Childers¹, Christopher Butcher¹, Nicholas Ouart², John Giuliani²

1. University of Nevada, Reno

2. Naval Research Laboratory

15:15 - 8C6 - The HED instrument at the European XFEL

Toma Toncian¹, Wolfgang Morgenroth², Alexander Pelka¹, Ian Thorpe³, Cornelius Strohmer⁴, Andreas Berghäuser¹, Jan-Patrick Schwinkendorf³, Hanns-Peter Liermann⁴, Samuele Di Dio Cafiso¹, Dominik Möller¹, Sebastian Göde³, Thomas Preston³, Monika Toncian¹, Andreas Schmidt³, Zuzana Konopkova³, Thomas Feldmann³, Konstantin Sukharnikov³, Mikako Makita³, Motoaki Nakatsutsumi³, Ulf Zastra³, Carsten Baetz¹, Lennart Wollenweber³, Valerio Cerantola³, Mohamed Hassan¹, Karen Appel³, Hauke Höppner¹, Eike-Christian Martens³

1. Helmholtz-Zentrum Dresden Rossendorf

2. Goethe-Universität Frankfurt

3. European XFEL GmbH

4. Deutsches Elektronen-Synchrotron DESY

Session: 8D

5.5 Insulation and Dielectric Breakdown I

Thursday 13:30 Room: Seminole D/E

Session Chair: Jacob Stephens

13:30 - 8D1 - (invited) Breakdown characteristics of natural and synthetic ester liquids when containing varying levels of moisture

Chris Williamson¹, Igor Timoshkin¹, Scott MacGregor¹, Mark Wilson¹, Martin Given¹

1. Strathclyde University

14:00 - 8D2 - Charge Carrier Mobilities in Dielectric Liquids

Qingjiang Xue¹, Igor Timoshkin¹, Martin Given¹, Mark Wilson¹, Scott MacGregor¹

1. University of Strathclyde

14:15 - 8D3 - Investigation of Insulated Wire Breakdown Under

DC and Lightning Impulse Conditions

Landon Collier¹, William Brooks¹, David Barnett¹, James Dickens¹, John Mankowski¹, David Hattz², W. A. Harrison², Andreas Neuber¹

1. Texas Tech University

2. CNS Pantex

14:30 - 8D4 - INCEPTION VOLTAGE FOR ELECTRICAL DISCHARGES IN THE PRESENCE OF TRIPLE JUNCTIONS

Michael Kirkpatrick¹, Giacomo Galli², Emmanuel Odic¹, Philippe

Dessante¹, Philippe Molinié¹, Hassen Hamrita³

1. GeePs — Group of electrical engineering - Paris, UMR CNRS 8507, CentraleSupélec, Univ. Paris-Sud, Université Paris-Saclay, Sorbonne Université

2. Centralesupelec

3. CEA, LIST, Sensors and Electronic Architectures Laboratory

14:45 - 8D5 - Investigation of electrical breakdown in high pressure (0.1 to 1 MPa) carbon dioxide and its mixtures under pulsed fields

Siddharth Kumar¹, Tom Huiskamp, Guus Pemen²

1. TU Eindhoven

2. Eindhoven University of Technology

15:00 - 8D6 - INFLUENCE OF THE CONCENTRATION ON SURFACE FLASHOVER OF THE EPOXY INSULATOR UNDER LIGHTENING IMPULSE VOLTAGE IN C4F7N-CO2 MIXTURES

Zhongbo Zheng¹, Weidong Ding¹, Zhichuang Li¹, Yishu Liu, Yue Li¹,

Shuhan Liu¹, Lanxi Li¹, Yinan Zhu¹

1. Xi'an Jiaotong University

15:15 - 8D7 - Researches on spectrums and macroscopic forms of DC arc in a short air gap

Ruiyang Guan¹, Zhidong Jia¹

1. Graduate School at Shenzhen, Tsinghua University

Session: 8E

6.4 Environmental, Industrial, and Display Applications II

Thursday 13:30 Room: Seminole C

Session Chair: Lanlan Nie

13:30 - 8E1 - (invited) Plasma application for emission control

Dae Hoon Lee¹, KWAN TAE KIM, Young-Hoon Song¹, Sungkwon Jo¹, Hongjae Kang¹

1. Korea Institute of Machinery and Materials

14:00 - 8E2 - Disinfection and Sensitization of Ear Infection Related Bacterial Biofilms by Microplasma Jet Array

Sun Peter P.¹, Jungeun Won¹, Gabrielle Choo-Kang¹, Wenyuan Chen¹,

Stephen A. Boppart¹, Thanh H. (Helen) Nguyen¹, J. Gary Eden¹

1. University of Illinois urbana Champaign

14:15 - 8E3 - Control of large electric spark through laser filamentation in air

Pierre WALCH¹, Benoit Mahieu¹, Leonid Arantchouk¹, André

Mysyrowicz², Aurélien Houard¹

1. Laboratoire d'Optique Appliquée, ENSTA ParisTech, Ecole Polytechnique, CNRS, Institut Polytechnique de Paris, 91128 Palaiseau, France

2. André Mysyrowicz Consultants, 6 Rue Gabriel, 78000 Versailles, France

14:30 - 8E4 - NITRIC OXIDE SCAVENGING OF HYDROXYL RADICALS IN A NANOSECOND PULSED PLASMA DISCHARGE GAS-LIQUID REACTOR

Radha Krishna Murthy Bulusu¹, Robert Wandell¹, Rachel Gallan¹, Bruce

Locke¹

1. Department of Chemical and Biomedical Engineering, Florida State University

14:45 - 8E5 - Optimizing Power Delivery using Impedance Matching Networks with Set-Point and Frequency Tuning for Pulsed Inductively Coupled Plasmas

Chenhui Qu¹, Joel Brandon², Carl Smith², Steven C. Shannon, David

Coumou³, Mark J. Kushner¹

1. University of Michigan

2. North Carolina State University

3. MKS Instruments

15:00 - 8E6 - Plasma Uniformity Control Technology of ICP Dry Etcher Equipment for Medium and Large Display

Hosik Yang, Honggoo Jeon, Sungjae Hong, Sinpyoung Kim, Ilho Noh

15:15 - 8E7 - Characteristics of nanosecond pulsed discharge type ozonizer with a tube to cylinder reactor

Hiroki Hidaka¹, Daichi Ikoma¹, Kanji Sasaki¹, Douyan Wang², Takao Namihira²

1. Graduate School of Science and Technology, Kumamoto University – Japan

2. Institute of Pulsed Power Science, Kumamoto University – Japan

Session: 8F

3.1 Plasma, Ion, and Electron Sources II

Thursday 13:30 Room: Space Coast I-III

Session Chair: John Harris

13:30 - 8F1 - Integrated Photonics for Low Transverse Emittance, Ultrafast Negative Electron Affinity GaAs Photoemitters

Rehan Kapadia¹, Louis Blankemeier¹, Fatemeh Rezaeifar¹

1. University of Southern California

13:45 - 8F2 - Coupled Optical and Electronic Simulation of Integrated Photonics based Hot-Electron Graphene Photoemitters using a 2-D Ensemble Monte Carlo Boltzmann Transport Equation Solver and a Finite-Difference Time-Domain Maxwell's Equation Solver

Ragib Ahsan¹, Fatemeh Rezaeifar¹, Rehan Kapadia¹

1. University of Southern California

14:00 - 8F3 - ELECTRON EMISSION FROM A METAL ELECTRODE SUBJECT TO A HIGH INTENSITY LASER IN THE PRESENCE OF DC ELECTRIC FIELDS

Sayed Nafis Sami¹, Dong Guo¹, Ravi Joshi¹

1. Texas Tech University

14:15 - 8F4 - Fabrication and Characterization of Diamond Field Emitter Array Cathodes

Dongsung Kim¹, Heather Andrews¹, Bo Choi², Ryan Fleming¹, Evgenya Simakov¹

1. Los Alamos National Laboratory

2. Cheju Halla University

14:30 - 8F5 - (invited) Shaped Beams from Diamond Field-Emitter Array Cathodes

Heather Andrews¹, Dongsung Kim¹, Kimberley Nichols¹, Evgenya

Simakov¹, Manoel Conde², Darrell Doran³, Gwanghui Ha, Wanming Liu³,

John Power, Jiahang Shao⁴, Charles Whiteford³, Eric Wisniewski², Sergey

Antipov⁵, Gongxiaohui Chen

1. Los Alamos National Laboratory

2. Argonne National Laboratory

3. ANL

4. Tsinghua University and Argonne National Laboratory

15:00 - 8F6 - FIELD EMISSION PROPERTIES OF VERTICAL AND LOOPED CARBON NANOTUBE FIBERS

Steven Fairchild¹, Jeongho Park¹, Peng Zhang², Taha Posos², Sergey Baryshev²

1. Air Force Research Laboratory
2. Michigan State University

15:15 - 8F7 - A STUDY ON ATTENUATION CHARACTERISTICS OF EXPLOSIVE EMISSION CATHODE PLASMA BASED ON ULTRA HIGH SPEED CAMERA TECHNOLOGY

tengfang wang¹, hua huang², xiao jin², zhenbang liu², yu bai², zhiwei dang², shuming peng²

1. Key Laboratory of Nuclear Physics and Ion-beam Application (MOE), Fudan University, Shanghai 200433, China
2. Science and Technology on High Power Microwave Laboratory, Institute of Applied Electronics, CAEP, Mianyang 621900, China

Session: 4P

Poster - Charged Particle Beams and Accelerators and High Energy Density Plasmas and Applications

Thursday 16:00 Room: Universal Center

Session Chair: Alexander Velikovich

4P01 - Validation of a configurable ion source for testing spaceflight-based thermal plasma measurement instruments

Ellen Robertson¹, Gregory Earle¹, Jonathan Green¹

1. Virginia Tech

4P02 - Particle-in-cell modeling of the Saturn accelerator vacuum section

Ben Ulmen¹, Ken Struve¹

1. Sandia National Laboratories

4P03 - HOLLOW CATHODE RADIAL PLASMA SOURCE BASED ON CLOSED DRIFT ANODE LAYER THRUSTER

Vasilii Gushenets¹, Efim Oks², Alexey Bugaev¹

1. High Current Electronics Institute
2. Tomsk State University of Control Systems and Radioelectronics

4P04 - MONTE CARLO SIMULATION OF SECONDARY ELECTRON YIELD FROM A MICROPOROUS SURFACE

Asif Iqbal¹, J. Ludwick², S. Fairchild³, M. Cahay², D. Gortat⁴, M. Sparkes⁴, W. O'Neill⁴, Peng Zhang¹

1. Department of Electrical and Computer Engineering, Michigan State University, East Lansing, Michigan 48824-1226, USA
2. Spintronics and Vacuum Nanoelectronics Laboratory, University of Cincinnati, Cincinnati, OH 45221, USA
3. Materials and Manufacturing Directorate, Air Force Research Laboratory, Wright Patterson Air Force Base, OH 45433
4. Institute for Manufacturing, University of Cambridge, 17 Charles Babbage Road, Cambridge CB3 0FS, UK

4P05 - Features of the millisecond arc discharge generating emission plasma in the forevacuum plasma-cathode source of large-radius electron beam

Andrey Kazakov¹, Aleksander Medovnik¹, Efim Oks¹

1. Tomsk State University of Control Systems and Radioelectronics

4P06 - Plasma source with multi-aperture extraction system for generating a ribbon electron beam

Denis Zolotukhin¹, Aleksander Klimov², Alexey Zenin²

1. The George Washington University
2. Tomsk State University of Control Systems and Radioelectronics

4P07 - Monte-Carlo modelling of parallel electron transport in the Proto-MPEX linear plasma device

Juan Caneses¹, Donald Spong¹, Cornwall Lau¹, Theodore Biewer¹, Tim Bigelow¹, John Caughman¹, Rick Goulding¹, Nischal Kafle², Juergen Rapp¹

1. Oak Ridge National Laboratory
2. The University of Tennessee, Knoxville

4P08 - Studies on power transfer efficiency in the drivers of the SPIDER inductively coupled RF ion source

Mauro Recchia¹, Palak Jain², Elena Gaio¹, Alberto Maistrello¹, Gianluigi Serianni¹, Andrea Zamengo¹

1. Consorzio RFX
2. University of Padova and Consorzio RFX

4P09 - Experimental Investigation of Pseudospark Discharge Based Plasma Cathode Electron Source for the Generation and Propagation of High Density and Energetic Electron Beams

Varun¹, Mahesh Kumar², Udit Narayan Pal³

1. CSIR- CEERI, Pilani, India and AcSIR, Ghaziabad, India
2. Microwave Devices Area, CSIR- Central Electronics Engineering Research Institute (CEERI), Pilani, Rajasthan-333031, India
3. CSIR-Central Electronics Engineering Research Institute, Pilani, India

4P10 - Statistical Quantization and Optimization of Cold Atmospheric Pressure Plasma Source for Destroying Bacteria and Biofilms through Design of Experiments Method

Jim Browning¹, Adam Croteau²

1. Professor
2. Boise State

4P11 - Properties of the energy-controlled atmospheric pressure plasma driven by multi-step external ballast capacitors

Chang-Seung Ha¹, Yun Sik Jin¹, Seong-Tae Han¹, Chae-Hwa Shon¹, Dae-Jong Kim¹, Ho-Jun Lee²

1. Korea Electrotechnology Research Institute
2. Pusan National University

4P12 - Radio Frequency Plasma Generation without 50 Ohm Matching

Tim Ziemba, James Prager¹, Kenneth E. Miller²

1. Eagle Harbor Technologies, Inc.
2. Eagle Harbor Technologies, Inc

4P13 - CNT Field Emission Cathodes Evaluated for a Portable X-Ray Generator for Root Imaging

Enbo Yang¹, Scott Kovaleski¹, Jacob Williams¹

1. University of Missouri

4P14 - The increasing efficiency of Penning Ion Source

Sergey Korenev¹, Anton Korenev¹

1. Kore-ip, LLC

4P15 - Characteristics of Cathode Spots in Vacuum Arc Discharge with Hydrogenated Cathode

Pan Dong, Jie Li¹, Jidong Long¹

1. Institute of Fluid Physics

4P16 - INVESTIGATION OF A PULSED PINCH PLASMA FOR THE APPLICATION AS FAIR PLASMA STRIPPER

Marcus Iberler¹, Thilo Ackermann¹, Bernhard Bohlender¹, Konstantin Cistakov¹, Hock Christian¹, Alexander Müller-Münster¹, Xu Ge¹, Joachim Jacoby¹

1. Goethe University Frankfurt

4P17 - Electron Beam Studies and X-ray Spectroscopy of Dense Plasma Focus Experiments

Emil Petkov¹, Stuart Jackson¹, Andrey Beresnyak², Nicholas Quart¹, Arati Dasgupta¹, John Giuliani¹

1. Naval Research Laboratory

2. Consultant to NRL through RSI

4P18 - DETERMINATION OF THE PARTICLES INVOLVED IN ANODE INITIATED VACUUM BREAKDOWN USING A 1-MV, 50-NANOSECOND PULSE GENERATOR

Raymond Allen¹, David Hinshelwood¹, Stuart Jackson¹, Paul Ottinger², Ian Rittersdorf¹, Joseph Schumer¹

1. Naval Research Laboratory

2. Consultant to NRL through Syntek Technologies, Fairfax, VA 22031

4P19 - Effects of the electron beam parameters on hydrodynamic response of aluminum: measurements and simulations.

Béatrice Bicrel¹, Bruno Cassany¹, Alain Galtié¹, Jacques Gardelle¹, David Hébert¹, Nicolas Szalek¹

1. CEA

4P20 - PROPAGATION OF ELECTRON BEAMS IN GAS CELLS

Bruno Cassany¹, David Hébert¹, Jacques Gardelle¹, Patrick Modin¹, Nicolas Szalek¹, Kate Bell², Chris Moore², B Medina², Matt Bettencourt²

1. CEA

2. Sandia National Laboratories

4P21 - Propagation of an intense relativistic electron beam through plasma.

claude fourment¹, Thomas Lahens¹, Rémi Maisonnay², Fabien Dorchie³

1. CEA-CESTA, Le Barp, F-33116 France

2. CEA, DAM, GRAMAT, F-46500 Gramat, France

3. Université de Bordeaux-CNRS-CEA, CELIA, Talence F-33405 France

4P22 - Comparisons of a Quantum Photoemission Model with Three-step Model and Fowler-Dubridge Model

Yang Zhou¹, Peng Zhang¹

1. Michigan State University

4P23 - Design and Development of 1 MV Graded insulator Electron Beam Diode for KALI 30 GW System

Rakhee Menon¹, Senthil K¹, Romesh Chandra¹, Amitava Roy¹, Archana Sharma¹

1. BARC

4P24 - SATURN ACCELERATOR BREMS DIODE SINGLE CATHODE CURRENT SCALING

Nathan Joseph¹, Chris Grabowski¹, Ken Struve¹, Ben Ulmen¹, Andrew Biller¹, Debrah Kirschner¹

1. Sandia National Laboratories

4P26 - Design and Testing of S-band RBWO for Gigawatt Level Output Microwave Power and CoBRA lens for directive Output

Romesh Chandra¹, Sandeep Singh¹, Amitava Roy¹, Rakhee Menon, Vishnu Sharma¹, Ankur Patel, Senthil Kalyanasundaram, Sabyasachi Mitra, Jayanta Mondal, Archana Sharma

1. Bhabha Atomic Research Centre

4P27 - EMPIRE simulation of the RKA diode into the gas cell

Brandon Medina¹, Chris Moore¹, Matt Bettencourt¹, Keith Cartwright¹, Troy Powell¹, Kate Bell¹, Timothy Pointon¹, Edward Phillips¹, Jacques Gardelle², David Hebert²

1. Sandia National Laboratories

2. CEA

4P28 - EFFECTS OF VACUUM IMPEDANCE CHANGES ON MITL FLOW USING 3D ELECTROMAGNETIC PIC SIMULATIONS

Troy Powell¹, Andrew Biller¹, Keith Cartwright¹, Timothy Pointon¹

1. Sandia National Laboratories

4P29 - PIC simulation of ion beam expansion in a drift cone

configuration for RFEA measurements.

Yao Du¹, Matthew Talley¹, Steven C. Shannon, Alok Ranjan², Peter Ventzek²

1. North Carolina State University

2. Tokyo Electron Limited

4P30 - Improvement of Heaven-I high power excimer laser facility for ICF study

Zhixing Gao¹, Jing Li¹, Zhao Wang¹

1. China Institute of atomic energy

4P31 - Auto-collimation and monitoring of KrF laser beam in the E-beam pumped high power excimer laser facility

Jing Li¹, Fengming Hu¹, Zhixing Gao¹, Zhao Wang¹

1. China Institute of atomic energy

4P32 - Parametric Study of a Cylindrical Inertial Electrostatic Confinement Fusion Device and its Application

Smruti Ranjan Mohanty¹, Neelanjan Buzarbaruah¹, Darpan Bhattacharjee¹, Donney Jigdu¹, Eiki Hotta²

1. Centre of Plasma Physics- Institute for Plasma Research

2. Tokyo Institute of Technology

4P33 - Development of high-voltage power supply system for upgrading ECH system of the KSTAR

Sunggug Kim¹, Sonjong Wang¹, Jongwon Han¹, Mi Joung¹, Inhyuk Rhee¹, Jong gu Kwak¹

1. NFRI (National Fusion Research Institute)

4P34 - ECH/EBW Heating System Improvements for the Proto-MPEX Experiment at ORNL

Tim Bigelow¹, John Caughman¹, Rick Goulding¹, Mike Kaufman¹, Ted Biewer¹, Cornwall Lau¹, Jeff Bryan¹, Juan Caneses¹, Juergen Rapp¹

1. Oak Ridge National Laboratory

4P35 - Development of an electron-beam pumped, argon fluoride laser for inertial confinement fusion

Matthew Myers¹, Matthew Wolford¹, Andy Schmitt¹, Tzvetelina Petrova¹, George Petrov¹, John Giuliani¹, Malcom McGeoch², Stephen Obenshain¹

1. U.S. Naval Research Laboratory

2. Plex, LLC

4P36 - Effect of viscosity on propagation of MHD waves in astrophysical plasma

Alemayehu Cherkos¹

1. Addis Ababa University

4P37 - PLASMA FORMATION PECULIARITIES ON DENCE PLASMA FOCUS DEVICES

Anuar Zhukeshov¹, Assem Amrenova², Zhanaly Moldabekov³, Erlan Baltabay³

1. al-Farabi Kazakh national university

2. KazNU al-Farabi

3. Kazakh national university named after al-Farabi

4P38 - Hybrid fluid/kinetic modeling of dense plasma focus devices using USim and VSim

Christine Roark, Peter Stoltz¹, John W. Luginsland², Stuart Jackson³, Andrey Beresnyak³

1. Tech-X Corp.

2. Confluent Sciences

3. US Naval Research Laboratory

4P39 - The Design, Properties, Operation and Modeling of the STPX Plasma Device

R. Williams¹, J. Clark, M. Richardson, S. Evans, D. Ologunogba, A. Aghedo, J. Titus, C. Weatherford

1. Florida A. & M. University

4P40 - Elements of Three Dimensional Modeling of a Pulsed Fission Fusion Hybrid Z-Pinch Target for Advanced Propulsion

Jason Cassibry¹, Robert Adams², Nathan Schilling¹, Kevin Schillo¹, Bryan Winterling¹, Brian Taylor², Steve Howe³

1. University of Alabama in Huntsville

2. NASA Marshall Space Flight Center

3. Howe Industries

4P41 - Overview of the C-2W Formation Section Pulsed Power

Ian Allfrey¹, Andrey Korepanov¹, Yuanxu Song¹, Erik Trask¹, Travis Valentine¹, Will Waggoner¹, Evan Bomgardner¹, Mark Morehouse¹, Kurt Walters¹

1. TAE Technologies, Inc.

4P42 - Monoenergetic ion acceleration from shock waves during self-channeling of laser pulse

Amritpal Singh¹

1. Lyallpur Khalsa College Jalandhar

4P43 - High Intensity Source of XUV Radiation Based on Ferrite Surface Breakdown

Ivan Tilikin¹, Sergey Tzhai¹, Sergey Savinov¹, Tatiana Shelkovenko¹, Alexey Agafonov¹, Sergey Pikuz¹

1. P. N. Lebedev Physical Institute

4P44 - Analysis for the Generation of Extreme Ultraviolet (EUV)/Soft X-Ray Radiations based on Short Pulse Electron Beams

NAVIN KUMAR SHARMA¹, Varun², Udit Narayan Pal³, Y. Choyal¹

1. School of Physics, Devi Ahilya University, Indore-452001, India

2. CSIR- CEERI, Pilani, India and AcSIR, Ghaziabad, India

3. CSIR-Central Electronics Engineering Research Institute, Pilani, India

4P45 - Combustion of electrical underwater exploded aluminum wire

Sergey Efimov¹, Alexander Rososhek¹, Anatoly Goldman¹, Somesh V.

Tewari¹, Yakov E. Krasik¹

1. Physics Department, Technion

4P46 - Fine Liquid-Metal Load for Repeatable Applications of Pulsed-power Discharge

Toru Sasaki¹, Ryota Mabe¹, Kazumasa Takahashi¹, Takashi Kikuchi¹

1. Nagaoka University of Technology

4P47 - Study of flat foil explosion at (0.1-5) GA/cm.sq current densities

Tatiana Shelkovenko¹, Sergey Pikuz¹, Ivan Tilikin¹, Egor Parkevich¹, Albert Mingaleev¹, William Potter², Levon Atayan², David Hammer²

1. P. N. Lebedev Physical Institute

2. Cornell University

4P48 - Effect of energy deposition on structures of exploding Al wires in argon gas

Haoyu Liu¹, Junping Zhao, Qianlong Zhang, Qiaogen Zhang

1. Xi'an Jiaotong University

4P49 - Target machining using datum point tooling for Precision High Energy-Density Liner Implosion Experiment (PHLIX) magnetic implosion system

Franklin Fierro¹, christopher rousculp¹

1. Los Alamos National Laboratory

4P50 - Optimizing Micropinches Produced by Hybrid X-pinches for High Time Resolution X-ray Spectroscopy

Ahmed Elshafiey¹, Jeffrey Musk¹, Sergey Pikuz², Tatiana Shelkovenko²,

Dave Hammer¹

1. Cornell University

2. P. N. Lebedev Physical Institute

4P51 - Diagnostics to study electrothermal instabilities on MYKONOS

M.W. Hatch¹, T.J. Awe², E.P. Yu², K.C. Yates³, T.M. Hutchinson⁴, B.S.

Bauer⁴, K. Tomlinson⁵, M. Gilmore¹

1. University of New Mexico

2. Sandia National Laboratories

3. Los Alamos National Laboratories

4. University of Nevada, Reno

5. General Atomics

4P52 - Experimental measurement of thermal and electrical conductivities in warm dense state generated by pulsed-power discharge for efficient energy conversion of fast ignition

Shingo Kusano¹, Kazumasa Takahashi¹, Toru Sasaki¹, Takashi Kikuchi¹

1. Nagaoka university of technology

4P53 - 2D Simulations of the ns-Laser Shock Peening

Vasily Pozdnyakov¹, Jens Oberrath¹

1. Institute of Product and Process Innovation, Leuphana University of Lueneburg, Germany

4P54 - Circuit Simulation with nonlinear magnetic core of a New Linear Transformer Driver Stage

Wei Zhenyu¹, Wang Yu¹

1. Xi'an Jiaotong University

4P55 - SIMULATIONS OF NOZZLE GAS FLOW AND GAS-PUFF Z-PINCH IMPLOSIONS WITH MAGNETIC FIELDS IN THE WEIZMANN Z-PINCH

Varun Tangri¹, John Giuliani², Guy Rosenzweig³, Tal Queller⁴, Yitzhak Maron⁴

1. Research Support Instruments

2. Plasma Physics Division, Naval Research Laboratory

3. Massachusetts Institute of Technology

4. Weizmann Institute of Science

4P56 - Study on Fault Conditions of a Single Stage of Fast Linear Transformer Drivers

Zhenyu Wei¹, Yu Wang¹, Xu He¹, Qi Shi¹, Qiangfeng Luo¹

1. Xi'an Jiaotong University

4P57 - ABLATION BEHAVIORS AND IMPLOSION DYNAMICS OF PRECONDITIONED TWO-WIRE Z-PINCH

Yihan Lu¹, Jian Wu¹, Huantong Shi¹, Daoyuan Zhang¹, Ziwei Chen¹,

Xingwen Li¹, Shenli Jia¹, Aici Qiu¹

1. Xi'an Jiaotong University

4P58 - Understanding electrothermal instability growth by comparing z-pinches with engineered defects to 3D-MHD simulations

Thomas Awe¹, Edmund Yu¹, Trevor Hutchinson², Bruno Bauer², Kurt Tomlinson³, David Yager-Elorriaga¹, Maren Hatch⁴, Gabriel Shipley¹, Brian Hutsel¹

1. Sandia National Laboratories

2. University of Nevada, Reno

3. General Atomics

4. University of New Mexico

4P59 - Investigating the Electrothermal Instability in Pulsed Power Solid Liner Implosions Using Extended Magnetohydrodynamics

Robert Masti, Bhuvana Srinivasan¹, Jacob King², Peter Stoltz², David Hansen³, Eric Held³

1. Virginia Tech

2. Tech-X Corporation

3. Utah State University

4P60 - Millimeter-wave Radiometry and Coherent Thomson Scattering for Studies of Power Balance in COBRA

Thomas Schmidt¹, M.W. Hatch¹, M. Gilmore¹, E. Schamiloglu¹
1. *University of New Mexico*

4P61 - Magnetic Field Diffusion into Al-6061 Rod under Megaampere Current Drive

Seth Kreher¹, Bruno Bauer¹, Chris Rousculp², Trevor Hutchinson¹, Irv Lindemuth²

1. *University of Nevada, Reno*
2. *Los Alamos National Laboratory*

4P62 - Electrostatic gyrokinetic simulations of sheared Z-pinch

Vasily Geyko¹, Mikhail Dorf¹, Justin Angus¹

1. *Lawrence Livermore National Laboratory*

4P63 - Measurements of the Magnetic Rayleigh Taylor Instability in Centimeter-Scale Magnetized Plasma Bubbles

R. H. Dwyer¹, D. M. Fisher¹, M. Gilmore¹

1. *University of New Mexico*

4P64 - Zeeman Spectroscopy Studies in Ar Gas Puff Z-Pinches on 1-MA COBRA

Niansheng Qi¹, Jacob Banasek¹, Sophia Rocco¹, E. Sander Lavine¹, William Potter¹, John Greenly¹, Dave Hammer¹, Bruce Kusse¹

1. *Cornell University*

4P65 - X-ray Spectroscopy and Total Yield Measurements on a Microsecond X-Pinch

G.S. Jaar¹, R.K. Appartain¹

1. *Florida A&M University*

4P66 - Initial Conditions & Plasma Evolution in the Hawk Dense Plasma Focus

Joseph Engelbrecht¹, Stuart Jackson¹, Bruce Weber¹, Joseph Schumer¹, Aliaksandr Mamonau², Daniel Klir³, Karel Rezac³, Jakub Cikhardt³

1. *U.S. Naval Research Laboratory*
2. *RSI*
3. *CTU*

4P67 - Extending Experimental and Diagnostics Capabilities on the 1-MA, 100-ns MAIZE Pulsed Power Facility

Akash Shah, Paul Campbell¹, Stephanie Miller¹, Jeff Woolstrum¹, Brendan Sporer¹, Nick Jordan¹, Ryan McBride¹

1. *University of Michigan*

4P68 - Faraday-Rotation fiber-based gauge for current measurement in pulse-power systems

Kobi Cohen¹, Yahel Horowitz¹, Gal Goldstein¹, Itay Gissis¹

1. *Rafael Advanced Defense Systems LTD.*

4P69 - Characterization of Neutron Production in Deuterium Z-pinch Experiments at Current of 3 MA

Jakub Cikhardt¹, Daniel Klir¹, Karel Rezac², Alexander V. Shishlov², Rustam K. Cherdizov², Balzhima Cikhardtova¹, Gennady N. Dudkin³, Vladimir A. Kokshenev², Kravarik Jozef¹, Pavel Kubes¹, Vojtech Munzar¹, Vladimir N. Padalko³, Nikolai A. Ratakhin², Karel Turek⁴, Valery A. Varlachev³

1. *Czech Technical University in Prague*
2. *Institute of High Current Electronics, SB RAS*
3. *National Research Tomsk Polytechnic University*
4. *Nuclear Physics Institute, Czech Academy of Sciences*

4P70 - Potential of dielectrics at electron beam irradiation in medium vacuum

Denis Zolotukhin¹, Victor Burdovitsin², Efim Oks²

1. *The George Washington University*
2. *Tomsk State University of Control Systems and Radioelectronics*

4P71 - Beam-plasma discharge for deposition of carbon-containing coatings inside dielectric cavity

Denis Zolotukhin¹, Yury Yushkov², Andrey Tyunkov², Efim Oks²

1. *The George Washington University*
2. *Tomsk State University of Control Systems and Radioelectronics*

4P72 - CORROSION RESISTANCE OF CARBON STEEL COATED WITH A SiO₂-ORGANOSILICON LAYER

Rita de Cássia Cipriano Rangel¹, Elidiane Cipriano Rangel¹, Nilson Cruz¹

1. *Technological Plasma Laboratory, Paulista State University - UNESP, Science and Technology Faculty, Sorocaba, SP, Brazil*

4P73 - EFFECT OF ELECTRON BEAM IRRADIATION ON THE SURFACE FLASHOVER OF POLYMERIC MATERIALS IN VACUUM

Chengyan Ren¹, Duo Hu¹, Yangwei Li¹, Hao Sun¹, Tao Shao¹, Ping Yan¹

1. *Key Laboratory of Power Electronics and Electric Drive, Institute of Electrical Engineering, Chinese Academy of Sciences*

4P74 - Synthesis of water based Al₂O₃ nanofluids using laser induced plasma

Magesh Rajan¹

1. *South Dakota School of Mines and Technology*

4P75 - Laser-driven acceleration of titanium ions from ultrathin targets and the calibration of the ion beam diagnostic

Joseph Strehlow, Jun Li¹, Pierre Forestier-Colleoni², Christopher

McGuffey², Tyler Daykin³, Edward McCary⁴, Mathieu Bailly-Grandvaux², Jonathan Peebles⁵, Guilhem Revet⁶, Shu Zhang², Todd Ditmire⁴, Michael Donovan⁴, Gilliss Dyer⁷, Julien Fuchs⁶, Erhard Gaul⁴, Joseph Gordon⁴, Andrew Higginson⁸, Gregory Kemp⁸, Mikael Martinez⁴, Harry McLean⁸, Michael Spinks⁴, Hiroshi Sawada³, F. Beg⁹

1. *Los Alamos National Laboratory*
2. *UCSD*
3. *UNR*
4. *UT Austin*
5. *LLE*
6. *LULI*
7. *SLAC*
8. *Lawrence Livermore National Laboratory*
9. *University of California, San Diego*

4P76 - Topanga: A Modern Code for E3 EMP Simulations

Bruce Cohen¹, Larson David¹, Mikhail Belyaev¹, Vincent Thomas²

1. *Lawrence Livermore National Laboratory*
2. *Los Alamos National Laboratory*

Friday AM

Session: 7Plenary

Plenary Fri - Bruce Cohen (2018 Charles K. Birdsall Award)

Friday 8:30 Room: Seminole Ballroom

Session Chair: David Wetz

Perspectives on Research in Computational Plasma Physics with Diverse Applications to Experiments

Bruce Cohen¹

1. *Lawrence Livermore National Laboratory*

Session: 9A

1.6 Plasma Chemistry

Friday 10:00 Room: Space Coast I-III

Session Chair: Jared Miles

10:00 - 9A1 - Reactivity Characterization Due to Ozone Generation by Low-Temperature Plasma Discharges at Engine Relevant Densities

Sayan Biswas¹, Isaac Ekoto¹, Riccardo Scarcelli²

1. *Sandia National Laboratories*

2. *Argonne National Laboratory*

10:15 - 9A2 - ATOMIC HYDROGEN GENERATION IN THE IONIZING PLASMA REGION AND EFFLUENT OF A HELIUM-WATER ATMOSPHERIC PRESSURE PLASMA JET BY TWO-PHOTON ABSORPTION LASER INDUCED FLUORESCENCE (TALIF)

Yuanfu Yue¹, VSSK Kondeti¹, Peter Bruggeman¹

1. *University of Minnesota*

10:30 - 9A3 - (invited) High-temperature uranium plasma chemistry

S. S. Harilal¹, E. Kautz¹, B. E. Bernacki¹, M C Phillips², P. Skrodzki³, M. Burger³, I. Jovanovic³

1. *Pacific Northwest National laboratory*

2. *University of Arizona*

3. *University of Michigan*

11:00 - 9A4 - Mapping of 2-D plasma-induced fluid flow using particle image velocimetry

Janis Lai¹, John Foster¹

1. *University of Michigan*

11:15 - 9A5 - (invited) The influence of microwave pulse length and repetition rate on laminar burning velocity in lean methane-air flames

Tomas Hurtig¹, Niklas Zettervall¹, Christer Fureby¹, Andreas Ehn², Elna Nilsson², Hanna Sundberg¹

1. *Division of Defence & Security, Systems and Technology, FOI – Swedish Defence Research Agency*

2. *Combustion Physics, Lund University*

11:45 - 9A6 - Species Dynamics in Ar/H Plasma Supporting Actinometry Diagnostics Correlation Experiments

Robert Terry¹

1. *Independent Research Professional, LLC*

Session: 9B

2.2 Fast-Wave Devices and 2.4 Vacuum Microelectronics and THz Devices

Friday 10:00 Room: Gold Coast I/II

Session Chair: Kimberley Nichols and Bruce Carlsten

10:00 - 9B1 - (invited) High-Power Testing of W-Band Accelerator Cavities

Mohamed Othman¹, Julian Picard², Samuel Schaub², Valery Dolgashev¹, Andrew Haase¹, Sudheer Jawla², Jeff Neilson¹, Bruno Spataro³, Sami Tantawi¹, Richard Temkin², Emilio Nanni¹

1. *SLAC National Accelerator Laboratory*

2. *Massachusetts Institute of Technology*

3. *INFN-LNF*

10:30 - 9B2 - Study of Electron Optics System for a 300 GHz Sheet Electron Beam Traveling-Wave Tube

Wonjin Choi¹, Ingeun Lee¹, Jinwoo Shin², EunMi Choi¹

1. *Ulsan National Institute of Science and Technology*

2. *Agency for Defense Development*

10:45 - 9B3 - (invited) EXPERIMENTAL CHARACTERIZATION OF A W-BAND PHOTONIC INTERACTION KLYSTRON

Jacob Stephens¹, Guy Rosenzweig¹, John Tucek², Mark Basten², Kenneth

Kreischer², Michael Shapiro¹, Richard Temkin¹

1. *Massachusetts Institute of Technology*

2. *Northrop-Grumman Systems Corp.*

11:15 - 9B4 - Development and testing of the 190 GHz dual mode OAM gyrotron with axial output

Ashwini Sawant¹, Ingeun Lee¹, Mun Seok Choe¹, EunMi Choi¹

1. *Ulsan National Institute of Science and Technology (UNIST)*

11:30 - 9B5 - Experimental Performance Evaluation of a 272 GHz Energy-Recirculating Folded Waveguide Traveling-Wave Tube Oscillator

Ingeun Lee¹, Wonjin Choi¹, Ashwini Sawant¹, Mun Seok Choe¹, Jinwoo Shin², EunMi Choi¹

1. *Ulsan National Institute of Science and Technology (UNIST)*

2. *ADD*

Session: 9C

4.7 Plasma Material Interactions

Friday 10:00 Room: Gold Coast III/IV

Session Chair: John Foster

10:00 - 9C1 - (invited) Theory for Self-organized Patterns on Liquid Anodes

Paul Rumbach¹, David B. Go¹

1. *University of Notre Dame*

10:30 - 9C2 - OLMAT: A NEW FACILITY FOR THE STUDY OF MATERIALS EXPOSED TO PLASMA AND LASER INDUCED HIGH THERMAL LOADS AT THE LABORATORIO NACIONAL DE FUSION

Francisco Tabares¹, David Tafalla¹, Daniel Alegre¹, Eider Oyarzabal¹, Macarena Liniers¹, Alfonso Soletto¹

1. *CIEMAT*

10:45 - 9C3 - Diagnostic of temporal and spatial evolution of nanosecond microwave-driven plasma

Chao Chang¹, Yindong Huang¹

1. *Xi'an Jiaotong University*

11:00 - 9C4 - Effect of Nano-Al₂O₃ Doping on Erosion Resistance of Tungsten-copper Electrode under 100 kA Pulsed Arc

shuai ren¹, Li Lee¹

1. Huazhong University of Science and Technology

11:15 - 9C5 - RF plasma based Nanostructurization of Tungsten for Plasma Facing Component Material Applications

Mayank Mishra¹, Rohit Medwal¹, J. Q. Pan², N. L. Wang², J. H. Xu², Paul Lee¹, Rajdeep Singh RAWAT¹, Joseph Vimal Vas¹

1. Natural Sciences and Science Education, National Institute of Education, Nanyang Technological University
2. Hwa Chong Institute

11:30 - 9C6 - POTOMAC: towards a realistic secondary and backscattered emission model for the multipactor

Adrien Plaças¹, Mohamed Belhaj², Julien Hillairet¹, Jérôme Puech³

1. CEA Cadarache

2. ONERA

3. CNES

11:45 - 9C7 - CHARACTERIZATION OF PLASMA IN CONTACT WITH LIQUID STATE MATERIALS WITH USING OPTICAL EMISSION SPECTROSCOPY

YEONGWOO SON¹, Winfrey Leigh¹

1. Pennsylvania State University

Session: 9D

5.5 Insulation and Dielectric Breakdown II

Friday 10:00 Room: Seminole A/B

Session Chair: Guy Rosenzweig

10:00 - 9D1 - (invited) Vacuum Insulator Flashover of Ultra High Vacuum Compatible Insulators

Josh Leckbee¹, Sean Simpson¹, Derek Ziska¹, Bill Bui¹

1. Sandia National Laboratories

10:30 - 9D2 - Vacuum Outgassing Study of Candidate Materials for Next Generation Pulsed Power and Accelerators: Improving the Boundary Conditions for Molecular Flow Simulations

Sean Simpson¹, Ronald Goeke¹, Kenneth Coombes¹, Karen Dezetter¹, Owen Johns¹, Josh Leckbee¹, Dan Nielsen¹, Matthew Sceiford¹

1. Sandia National Laboratories

10:45 - 9D3 - ROLE OF TEMPERATURE IN ELECTRICAL BREAKDOWN AT TRIPLE JUNCTIONS

Giacomo Galli¹, Michael J. Kirkpatrick², Emmanuel Odic², Philippe Dessante², Philippe Molinié², Hassen Hamrita³

1. Centralesupelec

2. GeePs — Group of electrical engineering - Paris, UMR CNRS 8507, CentraleSupélec, Univ. Paris-Sud, Université Paris-Saclay, Sorbonne Université

3. CEA, LIST, Sensors and Electronic Architectures Laboratory

11:00 - 9D4 - Electron Losses in Super-insulated Magnetically Insulated Transmission Lines

Rick Spielman¹, Adam Sefkow

1. University of Rochester, Laboratory for Laser Energetics

11:15 - 9D5 - FUNDAMENTAL STUDY OF UNIPOLAR AND RF BREAKDOWN IN ATMOSPHERIC AIR

Ivan Aponte¹, Benedikt Esser¹, James Dickens¹, John Mankowski¹, Andreas Neuber¹

1. Texas Tech University

11:30 - 9D6 - High Field RF Breakdown of Pressurized SF₆

Melvin Powell, Zach Shaw, James Dickens¹, John Mankowski¹, Andreas Neuber¹

1. Texas Tech University

11:45 - 9D7 - Effect of Relative Humidity on the Flashover Strength of Solid Insulation

Ruairidh Macpherson¹, Mark Wilson¹, Igor Timoshkin¹, Scott MacGregor¹,

Martin Given¹

1. University of Strathclyde

Session: 9E

6.1 Nonequilibrium Plasma Applications III

Friday 10:00 Room: Seminole C

Session Chair: Abdel-Aleam Mohamed

10:00 - 9E1 - (invited) Microplasma Photonic Crystals Beyond Three-Dimensions

Wenyuan Chen¹, Peter P. Sun¹, Runyu Zhang¹, Paul V. Braun¹, J. Gary

Eden¹

1. University of Illinois Urbana Champaign

10:30 - 9E2 - Effect of Plasma Modified BN on AC Breakdown Strength of BN/Epoxy Resin Nanocomposites

Yan Mi¹, Jiaxi Gou¹, Lu Gui¹, lulu Liu¹, Jiacheng Chen¹

1. Chongqing University

10:45 - 9E3 - The effect of applied voltage on the laminar-turbulent transition in atmospheric- pressure plasma jet

Abdel-Aleam Mohamed¹, Sahar Fadhlalmawla¹, Jamal Almarashi¹

1. Taibah University

11:00 - 9E4 - Decomposition of 2,4-dichlorobenzonic acid in hydroponic nutrient solution using discharge inside bubble

Katsuyuki Takahashi¹, Rikuya Oikawa¹, Syuhei Kawamura¹, Koichi

Takaki¹, Naoya Satta¹, Takuya Fujio²

1. Iwate University

2. Iwate Agricultural Research Center

11:15 - 9E5 - Inception Voltage for Corona-like Discharges Generated with 100-ns High Voltage Pulses in Water Depending on Pulse Shape and Water Conductivity

Raphael Rataj¹, Hans Höft¹, Juergen F. Kolb¹

1. Leibniz Institute for Plasma Science and Technology (INP)

11:30 - 9E6 - EFFECT OF SUBSTRATES ON A NANOSECOND HELIUM PLASMA JET IMPINGING ON WATER, SALINE OR PIG SKIN

shutong song¹, Siqi Guo¹, Chunqi Jiang¹

1. Old Dominion University

11:45 - 9E7 - Dynamic Band-Pass and Band-Stop Filters Realized with Multidimensional Microplasma Photonic Crystals

Peter P. Sun¹, Wenyuan Chen¹, Zhang Runyu¹, Zhihu Liang², Paul V.

Braun¹, J. Gary Eden¹

1. University of Illinois at Urbana-Champaign

2. Xi'an Jiaotong University

Session: 9F

9.3 Pulsed Power Diagnostics

Friday 10:00 Room: Seminole D/E

Session Chair: George Laity

10:00 - 9F1 - (invited) Spatially and temporally resolved

measurements of load current delivery on the Z Pulsed Power Facility using the Z Line VISAR diagnostic

Clayton Myers¹, David Bliss¹, Peter Celliers², Phil Datte², David Erskine², Mark Hess¹, Michael Jones¹, Thomas Awe¹, Duane Fratanduono², James Hammer², Chris Jennings¹, Keith LeChien², Kumar Raman², Paul Springer²
1. Sandia National Laboratories
2. Lawrence Livermore National Laboratory

10:30 - 9F2 - Electro-Optical Measurement of Electric Fields for Pulsed Power Systems

Israel Owens¹, Chris Grabowski¹, Nathan Joseph¹, Sean Coffey¹, Benjamin Ulmen¹, Debrah Kirschner¹, Kirk Rainwater¹, Ken Struve¹
1. Sandia National Laboratories

10:45 - 9F3 - HIGH CURRENT SENSING THROUGH FARADAY ROTATION OF POLARIZED LIGHT OF VARYING WAVELENGTHS IN FIBERS III

Israel Owens¹, Sean Coffey¹, T. Chris Grabowski¹
1. Sandia National Labs

11:00 - 9F4 - Upgrade of the Spallation Neutron Source Injection and Extraction Kicker Pulse Verification Systems

Ben Morris¹, Doug Curry¹, Robert Saethre², Eric Breeding¹
1. ORNL
2. Oak Ridge National Lab

11:15 - 9F5 - CYGNUS SYSTEM TIMING

Eugene Ormond¹, Keith Hogge², Michael Garcia¹, Percy Amos², John Smith³, Martin Parrales¹, Michael Misch², Mohammed Mohammed², Hoai-Tam Truong²
1. Sandia National Laboratories
2. Mission Support and Test Services
3. Los Alamos National Laboratory

11:30 - 9F6 - CYGNUS PERFORMANCE ON SEVEN SUBCRITICAL EXPERIMENTS

John Smith¹, Michael Garcia², Eugene Ormond², Martin Parrales², Paul Flores³, Keith Hogge³, Steven Huber³, Michael Misch³, Jesus Perez³, Thomas Romero³, Hoai-Tam Truong³
1. Los Alamos National Laboratory
2. Sandia National Laboratories
3. Mission Support and Test Services

11:45 - 9F7 - Flash lamps current monitoring using optically insulated FPGA technology under harsh pulsed power environment

Jean Marie Larbaig¹, Robert Ruscassie¹, Baptiste Cadilhon², Jean Marc Dienot¹, Anca Petre¹
1. Univ Pau & Pays Adour/ E2s Uppa, SIAME EPHT
2. CEA

Friday PM

Session: 5P

Poster - Compact and Explosive Pulsed Power and Pulsed Power Systems

Friday 13:30 Room: Universal Center

Session Chair: Brett Huhman and Carlos Martins

5P01 - High Speed Imaging of Polymer Bonded Explosives under Mechanical Stresses

Ryan Lee¹, Austin Hewitt², Raimi Clark¹, Tyler Buntin¹, David Barnett¹,

James Dickens¹, W. A. Harrison³, E. Tucker⁴, Andreas Neuber¹, John Mankowski¹

1. Texas Tech University
2. Center for Pulsed Power and Power Electronics(P3E)
3. CNS Pantex
4. Mission Engineering Development Group

5P02 - Probability of PBX Detonation Due to Impact Forces and Surface Grit

Austin Hewitt¹, W. A. Harrison², E. Tucker³, Raimi Clark¹, Tyler Buntin¹, David Barnett¹, James Dickens¹, Andreas Neuber¹, John Mankowski¹, Ryan Lee¹
1. Texas Tech University
2. CNS Pantex
3. Mission Engineering Development Group

5P03 - Numerical investigation of the plasma load matching with the current sources based on explosive magnetic generator

Valentina Zavalova¹, Mikhail Shurupov¹, Andrey Mashtakov¹, Andrey Gusev¹, Alexander Kozlov¹, Nina Shurupova¹
1. Joint Institute for High Temperatures of the Russian Academy of Sciences

5P04 - An ultra-portable X-pinch driver for hard X-ray diagnostics

Simon Bland¹, Nikita Chaturvedi², Andreas Georgakis¹, Theodore Gheorghiu¹, Hannah Horton³, Philip Moloney¹, Sergei Pikuz⁴, Tania Shelkovenko⁴, Seophine Stanislaus¹, Savva Theocharous¹, Christopher Wilson¹
1. Imperial College London
2. First Light Fusion
3. Cambridge University
4. Cornell University

5P05 - High-Energy Electric Gun for Exploding Foil Initiators

M. A. Rhodes¹
1. Lawrence Livermore National Labs

5P06 - Study on the restrike characteristics of metal electrical explosion

YU Hong-Xin, RAN Han-Zheng, TAN Rong-Rong, ZHONG Hua

5P07 - Pulsed power supply for 2 kA, 5 MeV linear induction accelerator

Aleksandr Akimov¹, Petr Bak¹, Kirill Zhivankov¹, Michail Egorychev¹, Aleksey Panov¹, Aleksey Pachkov¹, Yaroslav Kulenko¹, Andrey Eliseev¹
1. BINP

5P08 - Advanced Circuit Modeling of the PHELIX Pulsed Power System

Lee Merrill¹, Joseph Bradley III¹, Christopher Rousculp¹, David Oro¹
1. Los Alamos National Laboratory

5P09 - TECHNICAL DEVELOPMENT AND FIRST RESULTS OF ISENTROPIC COMPRESSION EXPERIMENTS ON THE ICE-16 TEST FACILITY

Francis Lassalle¹, Frédéric Zucchini¹, Thierry Chanconie¹, Philippe Combes¹, David Sol¹, Régis Lample¹, Bernard Roques¹, Georges Gaillard¹
1. CEA Gramat

5P10 - A 30 kV and High Avalanche Bulk Gallium Arsenide Semiconductor Switch

Cheng Ma, Wei Shi¹, Hong Liu¹, Lei Hou¹
1. Xi'an University of Technology

5P11 - Design and experiment of a new type of environmentally friendly intelligent electromagnetic pulse welding system

Dan Chen, Xuyu Liu, Si Wu

5P12 - Cinco: A Compact High-Current Driver for High Energy

Density Physics

Rick Spielman¹, David Reisman², Travis Bejines¹

1. Idaho State University

2. Sandia National Laboratories

5P13 - OPTIMIZING COMPACT MARX GENERATOR NETWORKS FOR CHARGING CAPACITIVE LOADS: SEQUENTIAL TRIGGERING AND PRACTICAL CONSIDERATIONS

C. Jerald Buchenauer¹, J. Cameron Pouncey¹, Jane Lehr¹

1. Department of Electrical and Computer Engineering, University of New Mexico

5P14 - Performance Analysis of a Compact Pulse Forming Stage and a Microstrip Type Balun for High Power Electromagnetics Applications

Ozge Eren Demirgoz¹

1. Middle East Technical University

5P15 - Design of Modular High-Voltage Nanosecond Pulse Generator with Adjustable Rise/Fall Time Based on MMC Topologies

Yan Mi¹, Hui Wan¹, Lulu Liu¹, Jiaxi Gou¹, Jiacheng Chen¹

1. Chongqing University

5P16 - The Optimization of High Voltage Nanosecond Pulse Generator with Auxiliary Trigger Circuit

Saikang Shen, Jiaqi Yan¹, Yanan Wang¹, Lanxi Li¹, Kaisheng Mei, Weidong Ding¹

1. Xi'an Jiaotong University

5P17 - Characterization of Compact Short Pulse Power Supply for Non-Thermal Plasma Discharge Applications

Ajeet Dhakar¹, S. K. Rai², V. K. Saini¹, S. K. Sharma⁴, Udit Narayan Pal¹

1. CSIR- Central Electronics Engineering Research Institute (CEERI), Pilani, Rajasthan-333031, India

2. B.K. Birla Institute of Engineering & Technology, Pilani-333031, Raj. India

4. Energetic & Electromagnetic Division, Bhabha Atomic Research Center, Visakhapatnam-530012, A.P, India

5P18 - New Design for Compact High Voltage Power Supply for Pulsed Power Applications

Howard Sanders¹

1. Sanders Pulsed Power LLC

5P19 - Ultra-High Voltage NanoDielectrCapacitor Development, and Testing for Compact Pulsed Power

Randy Curry¹, Luke Brown¹, Sarah Mounter¹, Samuel Dickerson¹, J.

Thomas Camp², Aaron Maddy¹

1. University of Missouri

3. Naval Surface Warfare Center, Dahlgren Division

5P20 - Hard X-ray and Proton Radiography of Underwater Electrical Wire Explosion

Alexander Müller-Münster¹, Marcus Iberler¹, Joachim Jacoby¹, Paul Neumayer², Dmitry Varentsov²

1. Goethe University Frankfurt

2. GSI Darmstadt

5P21 - All-solid-state bipolar high voltage nanosecond pulse adder with output parameters adjustable

Yonggang Wang¹, Yifan Huang¹, Min Jiang¹

1. Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences

5P22 - Compact, Mobile, Automated Pulser Designed for Ease of Use

Wayne Cox¹, Stephen Bayne²

1. Texas Tech University

2. Center for Pulsed Power and Power Electronics, Department of Electrical and Computer Engineering, Texas Tech University

5P24 - Indigenously developed pulsed power sources for nonequilibrium plasma applications

Suryakant Gupta¹, Keena Kalaria¹, Naresh Vaghela¹

1. Institute for plasma research

5P25 - Design of a Compact Magnetically Switched 200-kV, 4-kA, Pulse Forming Line Marx Generator

James Schrock¹, Susan Heidger², Brad Hoff, Jerald Parker³, Joshua Gilbrech³, ROBERT RICHTER-SAND³, Paul LePell³

1. AFRL

2. U.S. Air Force Research Laboratory

3. Leidos, Inc.

5P26 - Repetitive Triboluminescence X-Ray Source by Peeling Tapes

Seizo Furuya¹

1. Saitama Institute of Technology

5P27 - Pulsed Power Discharge Under a Highly Capacitive Load

James Allen¹, Marcus Ashford², Jennifer Zirnheld², Kevin Burke³

1. Primary Contributor

2. Secondary Contributor

3. Faculty Advisor

5P28 - Sustaining High Power RF Signal Generation in a Positive Feedback Network

A N M Wasekul Azad¹, Faisal Khan¹

1. University of Missouri-Kansas City

5P29 - Triggered gas switches for use in capacitor-switch assemblies for LTD technology

Ivan Lavrinovich¹, Denis Molchanov¹, D. Rybka¹, Semen Vagaytsev¹, Aleksander Erfort¹, Anton Artemov¹, Aleksander Lensky¹, Alexander Zhigalin¹

1. Institute of High Current Electronics SB RAS, Tomsk, Russia

5P30 - Concept designs of a compact LTD generator with a pulse rise time of 100 ns.

Ivan Lavrinovich¹, Denis Molchanov¹, D. Rybka¹, Semen Vagaytsev¹, Aleksander Erfort¹, Anton Artemov¹, Aleksander Lensky¹, Alexander Zhigalin¹

1. Institute of High Current Electronics SB RAS, Tomsk, Russia

5P31 - IMPROVEMENT OF THE SWITCHES RELIABILITY ON THE CEA 1MV LTD

Arnaud LOYEN¹, Stéphane LACOSTE¹, Francis LASSALLE¹, Bernard ROQUES¹, Frederic ZUCCHINI¹, Sandra RITTER¹, Martial TOURY¹

1. CEA

5P33 - Linear Transformer Driver for HEDP experiments at UC San Diego

Nicholas Aybar¹, Fabio Conti¹, Julio Valenzuela, Jeffrey Narkis¹, Vladimir

Fadeev¹, Alejandro Baez¹, Reisman David, Farhat Beg¹

1. UC San Diego

5P34 - PULSE POWER SYSTEM

Peter Stone

5P35 - Design of a Pulsed Alternator to drive a Single Stage Induction Coilgun

Apurva Kulkarni¹, M. Joy Thomas¹, Ashish Sharma¹, Ranashree Ram²

1. Indian Institute of Science

2. IISc Bangalore

5P36 - Deceleration after acceleration of armature that passes through stator coil during coil gun injection

5P37 - Experiments and Analysis of Down-slope Low-voltage Transition in C-type Solid Armature Railgun

Lixue Chen

5P38 - Utilization and Optimization of Superconducting Coil Parameters in Electromagnetic Launcher Systems

Hakan Polat¹, Doğa Ceylan², Ozan Keysan²

1. *Middle East Technical University/ Electrical and Electronics En*
2. *Middle East Technical University*

5P39 - Velocity In-bore Test Comparison Based on Magnetic Probe and Optical Probe in Electromagnetic Launch

Wang Zhenchun, Yuting Zhang¹, Bao Zhiyong, Dong Zonghao

1. *Yanshan University*

5P40 - Design and Analysis of the Electromagnetic Interceptor for the Anti-unmanned Aerial Vehicle

Chunyan Liang¹, Hongjun Xiang², Xichao Yuan, Qing-ao Lv²

1. *Army Engineering University*
2. *Shijiazhuang Mechanical Engineering College*

5P41 - Design of A Vehicular 200-kJ Pulsed Power System for Electrothermal-Chemical Launch Experiment

LIN XU, JUN ZHANG, HAO WANG, JIANNIAN DONG, HAO SUN

5P42 - The Development of Capacitive Nonlinear Transmission Lines and Their Performance Limits

Elizete Gonçalves Lopes Rangel¹, Jose Rossi², Joaquim Jose Barroso³,

Fernanda Sayuri Yamasaki², Leandro Carvalho Silva¹, Lucas Reis

Raimundi², Lauro Silva Neto⁴, Edl Schamiloglu⁵

1. *INPE*
2. *National Institute for Space Research*
3. *Aeronautics Institute of Technology*
4. *Federal University of São Paulo*
5. *University of New Mexico*

5P43 - Dynamics of Melting Solenoids for Laser Experiments on the National Ignition Facility

Phil Arnold¹, Evan Carroll¹, Steve Hawkins¹, Glen James¹, Brad Pollock¹, Mark Rhodes¹, Jay Javedani¹, John Moody¹, Anthony Johnson, Bruno Le Galloudec¹

1. *Lawrence Livermore National Laboratory*

5P44 - Development of an RF circuit amplifier fed by a low power nonlinear transmission line

Lauro Paulo Silva Neto¹, Henrique Monteiro Moraes¹, Jose Rossi², Joaquim Barroso³, Elizete Rangel⁴, Arlindo Conceição¹

1. *Federal University of São Paulo*
2. *National Institute for Space Research*
3. *Technological Institute of Aeronautics*
4. *National Institute for Space Research Brazil*

5P45 - Implementation of Line Type High Voltage Nanosecond Rectangular Pulse Generator with Adjustable Pulse Widths for Liquid Discharge Applications

Amol Deshpande¹, Uttam Goswami², G Veda Prakash³, Raj Singh², Anitha V P²

1. *Institute for Plasma Research, Gandhinagar, India.;Sardar Patel Institute of Technology, Mumbai, India.*
2. *Institute for Plasma Research, Gandhinagar, India.*
3. *Center for Energy Studies, Indian Institute of Technology, New Delhi, India*

5P46 - Pulsed IOT Power system for Medical Applications

Francisco Cabaleiro Magallanes¹, Sylvain Candolfi, Andres Sanchez

Gonzalez²

1. *A.D.A.M. Applications of Detectors and accelerators to Medicine*
2. *Ministere des affaires etrangeres et europeennes (FR)*

5P47 - Modular, High-Frequency, High-Voltage Inductive Adders

Chris Bowman¹, Tim Ziemba, Kenneth E. Miller², James Prager¹, Nick Yang²

1. *Eagle Harbor Technologies, Inc.*
2. *Eagle Harbor Technologies, Inc*

5P48 - High Average Power Nanofarad-Scale Capacitor Charging on Sub-Microsecond Timescales

Tim Ziemba, James Prager¹, Kenneth E. Miller¹, Chris Bowman¹, Ilia Slobodov¹, Morgan Quinley¹

1. *Eagle Harbor Technologies, Inc.*

5P49 - Solid-State LTD Module Using SiC-MOSFETs

Yu Feng¹, Taichi Sugai¹, Akira Tokuchi¹, Weihua Jiang¹

1. *Nagaokaut University of Technology*

5P50 - A Means of Producing Precisely Delayed High Peak Power Optical Pulses with Low Jitter

Maxwell Fazekas¹, Scott D. Kovaleski

1. *University of Missouri*

5P51 - Present Status of the Chopper-type Marx Modulator Development at KEK

Hiromitsu Nakajima¹, Mitsuo Akemoto¹, Masato Kawamura¹, Takuya

Natsui¹, Weihua Jiang², Taichi Sugai², Akira Tokuchi³, Yo Sawamura³

1. *High Energy Accelerator Research Organization*
2. *Nagaoka University of Technology*
3. *Pulsed Power Japan Laboratory Ltd.*

5P52 - Investigations on an optimized current pulse for pulsed flash lamps dedicated to high energy laser in repetitive mode.

Baptiste CADILHON¹, Robin VERGE², Antoine de Ferron³, Thierry

REESS⁴, Laurent PECASTAING⁴, Gaël PAQUIGNON¹, Luc Voisin⁵

1. *CEA CESTA*
2. *Univ Pau & Pays Adour/ E2S UPPA, SIAME Laboratory*
3. *Pau University*
4. *UNIV PAU & ADOUR, Laboratoire des Sciences de l'Ingénieur Appliquées à la Mécanique et au Génie Electrique, IPRA, EA4581, 64000, Pau, France*
5. *CEA*

5P53 - Generation and propagation of nitrogen laser pulses of long (< 3 μs) duration in air

Mladen M. Kekez¹

1. *High-Energy Frequency Tesla Inc.*

5P54 - Power supplies for non-thermal atmospheric pressure plasma generation

Alexander Gutsol¹, Yuriy Mirochnik¹, Volodymyr Tymoshuk¹

1. *LDS Technology Consultants, Inc.*

5P55 - ESS Klystron Production Test Stand

Michael Kempkes¹, Marcel Gaudreau¹, Rebecca Simpson¹, Ian Roth¹, Noah Silverman¹

1. *Diversified Technologies, Inc.*

5P56 - A METHOD OF ENERGY RECOVERY SWITCHING FOR PULSED POWER USING SIC-MOSFET

Tomohiko Yamashita¹, Ryo Fujimoto¹, Toru Tagawa¹, Kunihiko Sakamoto, Takashi Sakugawa²

1. *Kumamoto University*
2. *Institute of Pulsed Power Science, Kumamoto University*

5P57 - All solid state ultra-fast turn-on time compact MARX generator

Alexander Gertsman¹, Zeev Rubinshtein¹, Moshe Hershkovitz¹

1. *Rafael Advanced Defense Systems LTD*

5P58 - Development of a compact nanosecond pulse generator

Ryuki Matsukawa¹, Takehiro Yamaguchi¹, Mikiya Matsuda², Douyan

Wang³, Namihira Takao³

1. Graduate School of Science and Technology, Kumamoto University, Japan

2. Faculty of Engineering, Kumamoto University, Japan

3. Institute of Pulsed Power Science, Kumamoto University, Japan

5P59 - Energy Density Optimization of Inductive Pulsed Power Supply Module

Zhen Li¹, Xinjie Yu¹, Peiqi Zhu¹, hao sun

1. Tsinghua University

5P60 - Study on the Collaborative Work of Multiple Meat Grinder with SECT Modules

Bei Li¹, Xinjie Yu¹, hao sun, Zhen Li¹

1. Tsinghua University

5P61 - Meat Grinder with ACC Circuit

Hao Sun¹, Xinjie Yu¹, Zhen Li¹

1. Tsinghua University

5P62 - Development of bipolar pulsed transmitter based on modular structure for mineral exploration

Jung Soo Bae¹, Jong Soo Kim², Hyoung Suk Kim², Chan Hun Yu², Kim

Shin¹, Sung-Roc Jang³

1. University of Science & Technology

2. Korea Electrotechnology Research Institute

3. KERI

5P63 - Push-pull plasma power supply – combining techniques for increased stability

Piotr Krupski¹, Henryka Danuta Stryczewska², Grzegorz Komarzyniec¹

1. Lublin University of Technology, Faculty of Electrical Engineering and Computer Science

2. Lublin University of Technology, Poland

5P64 - Development of High Voltage Power Supply for The Upgrade KSTAR Helicon Current Drive System

Kwangho Jang¹, Sonjong Wang¹, Sunggug Kim¹, Jeehyun Kim¹, Hyunho

Wi¹, Hyunyoung Lee¹, Wook Cho¹, Daejun Choi¹, Jonggu Kwak¹

1. NFRI (National Fusion Research Institute)

5P65 - The influence of the architecture of the power system on the operational parameters of the GlidArc plasma reactor

Henryka Danuta Stryczewska¹, Grzegorz Komarzyniec², Piotr Krupski²

1. Lublin University of Technology, Poland

2. Lublin University of Technology, Faculty of Electrical Engineering and Computer Science

5P66 - Reduction of the conducted disturbances generated by the ignition systems of GlidArc plasma reactors

Grzegorz Komarzyniec¹, Michał Aftyka¹, Henryka Danuta Stryczewska²

1. Lublin University of Technology, Faculty of Electrical Engineering and Computer Science

2. Lublin University of Technology, Poland

5P67 - Pulsed Power Modulator with Active Pull-Down Using Diode Reverse Recovery Time

Su-Mi Park¹, Seung-Ho Song¹, CHANGI CHO¹, Hong-Je Ryoo¹

1. Chung-Ang University

5P68 - Present Status of the Klystron Modulator for SuperKEKB Injector Linac

Mitsuo Akemoto¹, shigeki fukuda², Hiromitsu Honma¹, Masato Kawamura¹,

Takuya Natsui¹, Hiromitsu Nakajima¹, Tetsuo Shidara²

1. High Energy Accelerator Research Organization

2. KEK

5P69 - Design and Commissioning of a Medium Voltage Testbed**Deploying Transient Loads**

David Wetz¹, David Dodson¹, Brian McRee¹, Jacob Sanchez¹,

Alexander Johnston¹, John Heinzel²

1. University of Texas at Arlington

2. Naval Surface Warfare Center - Philadelphia Division

5P70 - Optimized Power and Energy Generation, Storage and Conditioning for Army Rotorcraft

Thomas Podlesak¹

1. U.S. Army C5ISR Center

5P71 - Pulsed Power Systems Developed for the Lockheed Martin Compact Fusion Reactor

Adam Steiner¹, Nicolo Montecalvo¹, Maxwell Bilodeau¹, Jordan Locano¹,

Thomas McGuire¹

1. Lockheed Martin Aeronautics

5P72 - Design and Performance of a 4 MV, 14 kJ Marx Generator

Jon Mayes¹, Jeremy Byman¹, Chris Hatfield¹, David Kohlenberg¹, Paul

Flores¹

1. Applied Physical Electronics L.C.

5P73 - Design and Performance of a High Repetition Rate Compact Marx Generator

Jon Mayes¹, Jeremy Byman¹, Chris Hatfield¹, Paul Flores¹

1. Applied Physical Electronics L.C.

Session: 10A**1.1 Basic Phenomena III**

Friday 15:30 Room: Seminole A/B

Session Chair: Peng Zhang

15:30 - 10A1 - (invited) A Theory of AC Contact Resistance

Foivos Antoulidakis¹, Yue Ying Lau¹

1. University of Michigan

16:00 - 10A2 - GENERALIZED SELF CONSISTENT MODEL FOR TUNNELING CURRENT IN DISSIMILAR METAL-INSULATOR-METAL JUNCTIONS

Sneha Banerjee¹, Peng Zhang¹

1. Michigan State University

16:15 - 10A3 - Simulations of transient multipactor suppression due to dielectric surface charging

Matthew Feldman¹, Aimee Hubble¹, Rostislav Spektor¹, Nicolas Rongione¹,

Preston Partridge¹

1. The Aerospace Corporation

16:30 - 10A4 - Advanced Multipactor Diagnostics and Tools

Aimee Hubble¹, Matthew Feldman¹, Preston Partridge¹, Nicolas Rongione¹,

Rostislav Spektor¹

1. The Aerospace Corporation

16:45 - 10A5 - Theoretical investigation of the magnetic asymmetry effect by using a lumped element model

Dennis Engel¹, Moritz Oberberg¹, Berger Birk¹, Laura Kroll¹, Julian

Schulze¹, Peter Awakowicz¹, Ralf Peter Brinkmann¹

1. Ruhr University Bochum

17:00 - 10A6 - Vlasov-Poisson simulation of current-carrying ion acoustic instability: nonlinear saturation and ion kinetics

Kentarō Hara¹, Cameron Treece¹

1. Texas A&M University

17:15 - 10A7 - Pulsed mechanical device generates plasma in

water via cavitation

Xin Tang¹, David Staack¹
1. Texas A&M University

Session: 10B

4.6 Fast Z Pinches III

Friday 15:30 Room: Seminole D/E

Session Chair: Bruno Bauer

15:30 - 10B1 - (invited) Staged Z-pinch Experiments and Simulations Using Different Gas Shells

H. U. Rahman¹, E. Ruskov, P. Ney¹, F. Conti², J. Narkis, J. Valenzuela, F. Beg², E. Covington³, E. Dutra³

1. *Magneto-Inertial Fusion Technology Inc.*
2. *University of California, San Diego*
3. *University Of Nevada, Reno*

16:00 - 10B2 - Development of a 750kJ Dense Plasma Focus for Radiation Test Applications

Michael Butcher¹, Manuel Alan¹, Matt Domonkos¹, Nick Myers¹, Joseph Ruscetti¹, Bruce Freeman², Dan Treibel¹

1. *Verus Research*
2. *Integrated Applied Science*

16:15 - 10B3 - Experimental observations of a high-pressure, 750-kJ dense plasma focus

Manuel Alan¹, Michael Butcher¹, Matthew Domonkos¹, Joseph Ruscetti¹, Nicholas Myers¹, Dan Treibel¹, Bruce Freeman²

1. *Verus Research*
2. *Integrated Applied Science*

16:30 - 10B4 - Detailed modeling of DPF on HAWK generator

Andrey Beresnyak¹, John Giuliani¹, Stuart Jackson¹, Steve Richardson¹, Alexander Velikovich¹

1. *Naval Research Laboratory*

16:45 - 10B5 - Laboratory Astrophysics - Cold Absorption

Itay Gissis¹, Ehud Behar¹, Fisher Amnon¹

1. *Technion Inst. Of Technology Israel*

17:00 - 10B6 - EFFECT OF THE PREPULSE CURRENT ON THE PRECONDITIONED ALUMINUM WIRE ARRAY Z-PINCH

Yihan Lu¹, Jian Wu¹, Huantong Shi¹, Daoyuan Zhang¹, Ziwei Chen¹, Xingwen Li¹, Shenli Jia¹, Aici Qiu¹

1. *Xi'an Jiaotong University*

17:15 - 10B7 - Plasma Formation and Ablation Dynamics of Metallic Liner

Daoyuan Zhang¹, Jian Wu¹, Yihan Lu¹, Huantong Shi¹, Xingwen Li¹, Shenli Jia¹, Aici Qiu¹

1. *Xi'an Jiaotong University*

Session: 10C

5.5 Insulation and Dielectric Breakdown III

Friday 15:30 Room: Seminole C

Session Chair: Jacob Stephens

15:30 - 10C1 - Characterizing breakdown voltage in micro-gaps with multiple field emitters at atmospheric pressure

Yangyang Fu¹, Janez Krek², Peng Zhang¹, John Verboncoeur¹, Guy Parsey³, Mark Kushner³

1. *Michigan State University*
2. *Michigan State University, CMSE*

3. University of Michigan

15:45 - 10C2 - Spatio-temporal dynamics of pulsed gas breakdown in microgaps

Guodong Meng¹, Qi Ying¹, Amanda Loveless², Feihong Wu¹, Kejing Wang¹, Yangyang Fu³, Garner Allen², Yonghong Cheng¹

1. *Xi'an Jiaotong University*
2. *Purdue University*
3. *Michigan State University*

16:00 - 10C3 - A pulse-sequence resolved study on evolution of streamer dynamics and discharge mode transition under repetitive frequency nanosecond pulses in high-pressure nitrogen

Zheng Zhao¹, Shuhan Liu¹, Yanan Wang¹, Jiangtao Li¹

1. *Xi'an Jiaotong University*

16:15 - 10C4 - Evolution of ns breakdown in gases: Dynamic streamer model in Air, N₂, CO₂, and SF₆

Ting Liu¹, Igor Timoshkin¹, Scott MacGregor, Martin Given¹, Mark Wilson¹, Tao Wang

1. *University of Strathclyde*

16:30 - 10C5 - Buried Conductor Detection in The Seabed

jane Lehr¹, David Sanabria¹, Joong Kim²

1. *University of New Mexico*
2. *Office of Naval Research*

16:45 - 10C6 - Investigation of Sterolithographic Laser Additive Manufacturing Resins for Pulsed Power Applications

Robert Beattie-Rossberg¹, Salvador Portillo¹

1. *University of New Mexico*

17:00 - 10C7 - Flashover Studies in Pressurized Dry Air and Transformer Oil

Ian Bean, Colin Adams, Thomas Weber

17:15 - 10C8 - Study on Insulation Characteristics Evolution of Oil-impregnated Paperboard under Mechanical Stress

Yao Xiao¹, Yan-Jie Cui¹, Xi-Ning Li¹, Sheng-Chang Ji¹

1. *School of Electrical Engineering, Xi'an Jiaotong University*

Session: 10D

6.3 Plasma Thrusters

Friday 15:30 Room: Gold Coast I/II

Session Chair: Alex Shashurin

15:30 - 10D1 - The investigation of plume characteristics of a capillary discharge based pulsed plasma thruster

Wang Yanan, Ge Chongjian, Cheng Le, Ding Weidong, Geng Jinyue

15:45 - 10D2 - Measurements of the Characteristics of Plasma Plume Generated by Low Energy Surface Flashover

Yunping Zhang¹, Adam Patel¹, Alexey Shashurin¹

1. *Purdue University*

16:00 - 10D3 - (invited) Thrust-to-power ratio improvement of micro-cathode arc thruster by addition of the magnetoplasmadynamic stage

Denis Zolotukhin¹, Keir Daniels¹, Michael Keidar¹

1. *The George Washington University*

16:30 - 10D4 - Tripple langmuir Probe diagnostic for vacuum arc thrusters

Marina Kühn-Kauffeldt¹, Marvin Kühn¹, Vincent Andraud², Christophe Thibaut², Jochen Schein¹

1. *Universität der Bundeswehr München*

16:45 - 10D5 - Embedded miniature thrusters within carbon fiber reinforced structures

Dejan Nikic¹

1. *The Boeing Company*

17:00 - 10D6 - Modular design of a radial scaled Hall Thruster for different magnetic configurations

Alberto Olano Garcia¹, Haibin Tang¹, Junxue Ren¹, Guangchuan Zhang¹

1. *Beihang University*

17:15 - 10D7 - KINETIC MODELING OF ION THRUSTER PLUME PLASMA SURFACE INTERACTIONS

Nakul Nuwal¹, Deborah Levin²

1. *University of Illinois Urbana Champaign*

2. *Professor, AE, UIUC*

Session: 10E

7.2 High Current and High Power Pulsers II

Friday 15:30 Room: Gold Coast III/IV

Session Chair: Martial Toury

15:30 - 10E1 - (invited) SPLITS - RECONFIGURABLE 5.5 OHM SERIES PULSE FORMING LINES FOR MULTIPLE 300KV PULSE CREATION

Patrick Corcoran¹, David Spelts¹, Douglas Weidenheimer¹, Alannah Myers¹, Norman Link¹, Richard Stevens¹, Naresh Jaitly¹, Doug McGlathery¹, Gregory Dale², Mark Crawford², Juan Barraza²

1. *L3 Applied Technologies, Inc.*

2. *Los Alamos National Laboratory*

16:00 - 10E2 - Considerations for improvements to the 25 TW Saturn high-current driver

Mark Savage¹, Kevin Austin¹, Sean Coffey¹, Peter Jones¹, Nathan Joseph¹, Debra Kirschner¹, John Lott¹, Bryan Oliver¹, Rick Spielman², Ken Struve¹

1. *Sandia National Laboratories*

2. *Idaho State University*

16:15 - 10E3 - Technique to determine intense electron beam parameters and X-ray spectra from dose-rate measurements at different angles

Bruce Weber¹, Ian Rittersdorf¹, Timothy Renk², David Hinshelwood¹, Stephen Swanekamp¹

1. *Naval Research Laboratory*

2. *Sandia National Laboratories*

16:30 - 10E4 - M3: A New Pulsed Power Machine Dedicated to Inertial Confinement Fusion Experiments

Luis Sebastian Caballero Bendixsen¹, Thomas Clayson¹, Jamie Darling¹, Nicolas Hawker¹, Paul Holligan¹, James Parkin¹, Oli Hall¹, Simon Hall¹

1. *First Light Fusion*

16:45 - 10E5 - M3 Pulsed Power Generator Diagnostic Suite

Luis Sebastian Caballero Bendixsen¹, Thomas Clayson¹, Jamie Darling¹, Nicolas Hawker¹, Paul Holligan¹, James Parkin¹, Jonathan Skidmore¹

1. *First Light Fusion*

17:00 - 10E6 - All-solid-state bipolar high voltage nanosecond pulse adder with output parameters adjustable

Yonggang Wang, Yifan Huang, Min Jiang

17:15 - 10E7 - The Behavior of Pulsed Steel Wire Discharges

Maximilian Bigelmayer¹, Petrus Pieterse², Dirk Uhrlandt²

1. *Institut für Elektrische Energietechnik, Universität Rostock, Germany*

2. *Leibniz-Institut für Plasmaforschung und Technologie e.V., Greifswald,*

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