

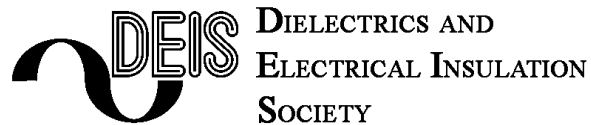
2012 International Power Modulator and High Voltage Conference

June 3 - 7, 2012

San Diego, CA



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WELCOME

On behalf of the International Power Modulator and High Voltage Conference (IPMHVC) Executive Committee and the Conference and Technical Program Committees, we welcome you to the 2012 IEEE IPMHVC. This year we have received a record number of more than 300 abstract submissions from 865 authors and co-authors. Almost 60% of these were sent in from our international colleagues in 26 different countries, which emphasize the international character of this conference. Significant participation came from China, India, Japan, United Kingdom, Korea, Germany, Russia, France, and Brazil. The most popular technical topics were Solid State Modulators, Components, and Switches and Dielectrics and Breakdown followed by Biological, Medical, and Environmental Applications; High Voltage Testing and Diagnostics; High Power Microwaves, Radiating Structures, and Electromagnetic Propagation; and Compact Pulsed Power Systems. Abstracts were also collected in several other areas including Power Electronics and Power Supplies; Analytical Methods, Modeling, and Simulation; Plasma Opening and Closing Switches; High Voltage Design and Analysis; High Current Systems and EM Launchers; Accelerators, Radar, and RF Applications; Power Conditioning and Pulse Shaping; etc.

The technical program of the 2012 IEEE IPMHVC is being held at the conference hotel, the Hilton San Diego Bayfront. The Hilton Bayfront is the newest waterfront hotel on San Diego Bay and is located within minutes of several attractions including the San Diego harbor, San Diego Padre's PETCO Park stadium, Coronado island, and the vibrant Gaslamp Quarter of the downtown area which boasts more than 16 square blocks and more than 150 restaurants, shops, and nightclubs. The social program opens with the welcome reception on Sunday evening in the Exhibitors area, followed by a "night out" dinner at the USS Midway Museum on Monday evening, and a reception and conference awards banquet on Tuesday evening (Hilton Bayfront).

The conference is fully sponsored by the IEEE Dielectrics and Electrical Insulation Society and technically co-sponsored by the IEEE Nuclear and Plasma Sciences Society and the IEEE Electron Devices Society. We gratefully acknowledge the sponsorship from government, university, and industry, and the support from exhibitors. We encourage you to visit the booths and talk to the exhibitors.

We would like to express our sincere gratitude to the entire Conference Organizing Committee for all their efforts and we extend our sincere thanks to all the members of the Technical Program Committee for their hard work in reviewing the abstract submissions and defining an outstanding technical program. Finally, we thank all of the presenters and attendees for contributing to the ongoing success of this conference and we look forward to seeing you in Denver, Colorado in 2014.

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2012 IPMHVC General Conference Chair

Juergen Kolb
2012 IPMHVC Technical Program Chair

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GENERAL INFORMATION

Onsite Conference Registration Desk

Sapphire West Foyer, Hilton San Diego Bayfront
Sunday, June 3, 2012 2:00 PM - 8:00 PM
Monday, June 4, 2012 7:30 AM - 5:30 PM
Tuesday, June 5, 2012 7:30 AM - 5:30 PM
Wednesday, June 6, 2012 7:30 AM - 3:30 PM

Exhibit Times

Sapphire CDGH - Exhibits Area, Hilton San Diego Bayfront
Sunday 6:00 PM - 8:00 PM
Monday 7:30 AM - 12 PM and 1:30 PM - 5:30 PM
Tuesday 7:30 AM - 12 PM and 1:30 PM - 5:30 PM
Wednesday 7:30 AM - 12 PM and 1:30 PM - 3:30 PM

Companion Program

TBD, please see the registration desk and the conference website for more information

Short Courses

Aqua 306/308, Hilton San Diego Bayfront
Thursday, June 6, 2012 8:00 AM - 2:45 PM
Breakfast for short course attendees starts at 7:15 AM

Technical Tour

General Atomics DIII-D National Fusion Facility
Thursday, June 6, 2012 1:30 PM - 4:00 PM

Social Events

Welcome Reception

Sapphire CDGH - Exhibits Area, Hilton San Diego Bayfront
Sunday, June 3, 2012 6:00 PM - 8:00 PM

Off-site dinner at the USS Midway

Monday, June 4, 2012 6:30 PM - 10:00 PM
Buses will depart from the Conference Hotel,
Level 1, starting at 6:15 PM.

Conference Awards Dinner

Tuesday, June 5, 2012, Hilton San Diego Bayfront
Reception (Sapphire CDGH) 6:30 PM - 7:30 PM
Dinner (Sapphire KLOP) 7:30 PM - 10:00 PM

For conference registrants only

Sapphire CDGH - Exhibits Area, Hilton San Diego Bayfront
Monday, Tuesday, and Wednesday
Continental Breakfast 7:15 AM - 8:15 AM
Coffee Break 9:30 AM - 10:00 AM
Afternoon Break 3:00 PM - 3:30 PM

2012 IEEE IPMHVC SCHEDULE-AT-A-GLANCE

Location: Hilton San Diego Bayfront, San Diego, CA
(unless otherwise noted)

Sunday, June 3, 2012

- 2:00 – 8:00 PM Registration
Sapphire West Foyer
- 6:00 – 8:00 PM Welcome reception
Sapphire CDGH - Exhibits Area

Monday, June 4, 2012

- 7:15 – 8:15 AM Breakfast (registrants only)
Sapphire CDGH - Exhibits Area
- 8:15 – 8:30 AM Welcome
Sapphire KLOP
- 8:30 – 9:30 AM Plenary 1
Sapphire KLOP
- 9:30 – 10:00 AM Break
Sapphire CDGH - Exhibits Area
- 10:00 – 12:00 PM Oral Session 1
Solid State Modulators, Components and
Switches 1
Sapphire OP
- 10:00 – 12:00 PM Oral Session 2
Dielectrics and Breakdown
Sapphire KL
- 12:00 – 1:30 PM Lunch (on your own)
- 1:30 – 3:00 PM Poster Session 1
Solid State Modulators, Components
Switches, Dielectrics, Breakdown, and
Power Electronics and Power Supplies
Aqua 306/308
- 3:00 – 3:30 PM Break
Sapphire CDGH - Exhibits Area
- 3:30 – 5:30 PM Oral Session 3
Solid State Modulators, Components and
Switches 2, Power Electronics and Power
Supplies
Sapphire OP

3:30 – 5:30 PM Oral Session 4
Biological, Medical, and Environmental
Applications
Sapphire KL

6:15 PM Starting time of the bus shuttle to the
Midway. It will depart on Level 1 of the
conference hotel.

6:30 – 10:00 PM Night Out dinner at the USS Midway

Tuesday, June 5, 2012

7:15 – 8:15 AM Breakfast (registrants only)
Sapphire CDGH - Exhibits Area

8:15 – 8:30 AM Conference Updates
Sapphire KLOP

8:30 – 9:30 AM Plenary 2
Sapphire KLOP

9:30 – 10:00 AM Break
Sapphire CDGH - Exhibits Area

10:00 – 12:00 PM Oral Session 5
Plasma Opening and Closing Switches,
Lasers and other Radiation Sources
Sapphire KL

10:00 – 12:00 PM Oral Session 6
High Voltage Testing and Diagnostics
Sapphire OP

12:00 – 1:30 PM Lunch (on your own)

1:30 – 3:00 PM Poster Session 2
Biological, Medical, and Environmental
Applications, Plasma Opening and Closing
Switches, Lasers and Other Radiation
Sources, High Voltage Testing and
Design, Compact Pulsed Power, and
Power Conditioning and Pulse Shaping
Aqua 306/308

3:00 – 3:30 PM Break
Sapphire CDGH - Exhibits Area

3:30 – 5:30 PM Oral Session 7
Compact Pulsed Power Systems
Sapphire OP

- 3:30 – 5:30 PM Oral Session 8
High Voltage Design and Analysis,
Accelerators, Radar, and RF Applications,
Reliability and Transient Suppression
Sapphire KL
- 6:30 – 7:30 PM Reception
Sapphire CDGH - Exhibits Area
- 7:30 – 10:00 PM Conference Awards Banquet
Sapphire KLOP

Wednesday, June 6, 2012

- 7:15 – 8:15 AM Breakfast (registrants only)
Sapphire CDGH - Exhibits Area
- 8:15 – 8:30 AM Conference Updates
Sapphire KLOP
- 8:30 – 9:30 AM Plenary 3
Sapphire KLOP
- 9:30 – 10:00 AM Break
Sapphire CDGH - Exhibits Area
- 10:00 – 12:00 PM Oral Session 9
High Current Systems and EM Launchers
Sapphire KL
- 10:00 – 12:00 PM Oral Session 10
High Power Microwaves, Radiating
Structures, and Electromagnetic
Propagation
Sapphire OP
- 12:00 – 1:30 PM Lunch (on your own)
- 1:30 – 3:00 PM Poster Session 3
High Voltage Design and Analysis,
Accelerators, Radars, and RF
Applications, Reliability and Transient
Suppression, High Current Systems and
EM Launchers, High Power Microwaves,
Radiating Structures, and Electromagnetic
Propagation, Analytical Methods,
Modeling, and Simulation, Prime Power
and Power Systems, Energy Storage
Devices and Components, High Energy
Systems
Aqua 306/308

- 3:00 – 3:30 PM Break
Sapphire CDGH - Exhibits Area
- 3:30 – 5:30 PM Oral Session 11
Analytical Methods, Modeling, and Simulations
Sapphire KL
- 3:30 – 5:30 PM Oral Session 12
Power Conditioning and Pulse Shaping, Energy Storage Devices and Components
Sapphire OP

Thursday, June 7, 2012

- 7:15 – 8:00 AM Breakfast for Short Course Attendees
Aqua 306/308
- 8:00 – 12:00 PM Short Course 1: An Overview of Electric Power Systems Engineering
Dr. Charles A. Gross
Auburn University
Aqua 306A
- 8:00 – 12:15 PM Short Course 2: Power Electronics
Dr. Craig Burkhart
SLAC National Accelerator Laboratory
Aqua 308
- 8:00 – 2:45 PM Short Course 3: RF and HPM Sources
Dr. Bruce Carlsten
Los Alamos National Laboratory
Aqua 306B
- 11:45 – 1:15 PM Lunch Break for Short Course 3 attendees
(on your own)
- 1:30 – 4:00 PM Technical Tour of the General Atomics DIII-D National Fusion Facility
Please see the registration desk and the conference website for more information

2012 IEEE IPMHVC TECHNICAL PROGRAM

Location: Hilton San Diego Bayfront, San Diego, CA
(unless otherwise noted)

Monday, June 4, 2012

8:15 Welcome (Sapphire KLOP)

Plenary 1

Monday, June 4, 2012 8:30 – 9:30 AM (Sapphire KLOP)

Session Chair: Hulya Kirkici, Auburn University

HIGH VOLTAGE, BIOFUELS, AND CO-PRODUCTS TAKING HIGH VOLTAGE TO THE (FARM) FIELD

Robert Hebner

University of Texas, Austin

Oral Session 1: Solid State Modulators, Components and Switches 1

Monday, June 4, 2012 10:00 AM – 12:00 PM (Sapphire OP)

Session Chair: Marcel Gaudreau, Diversified Technologies, Inc.

10:00 101,2 (Invited)

COMPACT SILICON SGTO MODULE FOR PULSE SWITCHING BEYOND 6 KV, 100 KA

*Heather O'Brien¹, Aderinto Ogunniyi¹, William Shaheen²,
Victor Temple³, Charles Scozzie¹*

¹U.S. Army Research Laboratory Adelphi, MD, USA,

*²Berkeley Research Associates Beltsville, MD, USA, ³Silicon
Power Corp. Clifton Park, NY, USA*

10:30 103

SPICE ANALYSIS OF AN INNOVATIVE SOLID- STATE MARX TOPOLOGY UTILIZING A BOOST REGULATOR CIRCUIT TO GENERATE MILLISECOND PULSES WITH LOW DROOP

Christopher Yeckel, Richard Cassel

Stangenes Industries Inc. Palo Alto, CA, USA

10:45 104

A HIGH POWER CASCODE SWITCH FOR RAPID, EFFICIENT ENERGY TRANSFER AT HIGH REPETITION RATES

Jason M. Sanders, Andras Kuthi, Martin A. Gundersen

*University of Southern California, Electrical Engineering -
Electrophysics, Los Angeles, CA, USA*

- 11:00 105**
NEW CONCEPTS FOR PULSED POWER MODULATORS: IMPLEMENTING A HIGH VOLTAGE SOLID-STATE MARX MODULATOR
Floyd Arntz¹, Kevin Ostlund¹, Michael Kempkes¹, Jeffrey Casey²
¹Diversified Technologies, Inc. Bedford, MA, USA, ²Rockfield Research, Inc. Las Vegas, NV, USA
- 11:15 106**
HIGH AVERAGE POWER HIGH VOLTAGE MODULATOR USING A DUAL PULSE TRANSFORMER CIRCUIT
Werner Hartmann¹, Norbert Grass², Klaus-Dieter Rohde¹, Martin Schwendner²
¹Siemens AG, CT T DE HW4, Erlangen, Germany, ²Georg-Simon-Ohm University Nuremberg, Germany
- 11:30 107**
THE SLAC P2 MARX
Mark Kemp, Andrew Benwell, Craig Burkhart, David MacNair, Minh Nguyen
 SLAC National Accelerator Laboratory Menlo Park, CA, USA
- 11:45 108**
DESIGN OF A 20 KHZ MAGNETIC PULSE COMPRESSOR
Dongdong Zhang¹, Yuan Zhou⁴, Wenfeng Li³, Jiayu xu³, Jue Wang¹, Yaohong Sun¹
¹Chinese Academy of Sciences, Institute of Electrical Engineering, Beijing, China, ²Chinese Academy of Sciences, Key Laboratory of Power Electronics and Electric Drive, Beijing, China, ³Graduate School of Chinese Academy of Sciences Beijing, China, ⁴Tianjin University of Technology and Engineering Tianjin, China

Oral Session 2: Dielectrics and Breakdown

Monday, June 4, 2012 10:00 AM – 12:00 PM (Sapphire KL)

Session Chair: Raymond Allen, Naval Research Laboratory

- 10:00 201**
SURFACE FLASHOVER MECHANISM ON THE LIQUID IMMERSSED DIELECTRICS
Jouya Jajidian¹, Markus Zahn¹, Nils Lavesson², Ola Widlund², Karl Borg²
¹Massachusetts Institute of Technology Cambridge, MA, USA, ²ABB Corporate Research Västerås, Sweden

- 10:15 202**
**THE STATISTICAL AND FORMATIVE TIMES FOR
 BREAKDOWN AT A POLYMER-OIL INTERFACE**
*Mark Wilson¹, Martin Given¹, Igor Timoshkin¹, Scott
 MacGregor¹, Tao Wang¹, Mark Sinclair², Ken Thomas², Jane
 Lehr³*
¹University of Strathclyde, Electronic & Electrical
 Engineering, Glasgow, United Kingdom, ²AWE Aldermaston,
 Hydrodynamics Division, Reading, United Kingdom, ³Sandia
 National Laboratories, Exploratory Pulsed Power,
 Albuquerque, NM, USA
- 10:30 203**
**INITIATION MECHANISM OF NEGATIVE PULSED
 DISCHARGE IN SUPERCRITICAL CARBON
 DIOXIDE**
*Tomohiro Furusato, Takeshi Ihara, Tsuyoshi Kiyama, Sunao
 Katsuki, Masanori Hara, Hidenori Akiyama
 Kumamoto University, Graduate School of Science and
 Technology, Kumamoto, Japan*
- 10:45 204**
**SPATIALLY-RESOLVED SPECTRAL
 OBSERVATIONS OF PULSED SURFACE
 FLASHOVER PLASMA IN A NITROGEN
 ENVIRONMENT**
*Andrew Fierro, George Laity, Andreas Neuber, Lynn
 Hatfield, James Dickens
 Texas Tech University, Center for Pulsed Power and Power
 Electronics, Lubbock, TX, USA*
- 11:00 205**
**INVESTIGATION OF VACUUM UV ABSORPTION
 DURING LOW-TEMPERATURE PLASMA
 FORMATION IN N₂/H₂ MIXTURES AT
 ATMOSPHERIC PRESSURE**
*George Laity¹, Andrew Fierro¹, Lynn Hatfield¹, Andreas
 Neuber¹, James Dickens¹, Klaus Frank^{1,2}*
¹Texas Tech University, Center for Pulsed Power and Power
 Electronics, Lubbock, TX, USA, ²Friedrich – Alexander
 University at Erlangen - Nuernberg, Erlangen Centre for
 Astroparticle Physics, Erlangen, Germany
- 11:15 206**
**SIMULATION OF HIGH-VOLTAGE DC
 BREAKDOWN FOR ANGLED DIELECTRIC
 INSULATORS INCLUDING SPACE-CHARGE AND
 GAS-COLLISION EFFECTS**
Manuel P. Aldan¹, John P. Verboncoeur²
¹University of California at Berkeley, Nuclear Engineering,
 Berkeley, CA, USA, ²Michigan State University, Electrical
 and Computer Engineering, East Lansing, MI, USA

11:30 207

REINFORCED INSULATION PROPERTIES OF EPOXY RESIN/ SiO₂ NANOCOMPOSITES BY ATMOSPHERIC PRESSURE PLASMA MODIFICATION

Wei Yan¹, Toan Phung¹, Zhaojun Han², Kostya (Ken) Ostrikov²

¹University of New South Wales, School of Electrical Engineering and Telecommunications, Sydney, Australia, ²CSIRO Material Science and Engineering, Plasma Nanoscience Centre Australia, Lindfield, Australia

11:45 208

FLASHOVER PHENOMENA ACROSS SOLID DIELECTRICS IN VACUUM: MECHANISM AND SUPPRESSION

Guan-Jun Zhang, Jiang-Yang Zhan, Xue-Zeng Huang, Hai-Bao Mu

Xi'an Jiaotong University, School of Electrical Engineering, Xi'an, China

Poster Session 1: Solid State Modulators, Components Switches, Dielectrics, Breakdown, and Power Electronics and Power Supplies

Monday, June 4, 2012 1:30 – 3:00 PM (Aqua 306/308)

Session Chair: Randy Cooper, Cooper Consulting Services Inc.

1P1 FAST OPENING SWITCH APPROACH FOR HIGH-VOLTAGE VACUUM TUBE PROTECTION APPLICATION

Wolfhard Merz¹, Monty Grimes²

¹DESY, MKK7, Hamburg, Germany, ²Behlke Power Electronics LLC Billerica, MA, USA

1P2 HYBRID OPTIONS FOR UPGRADE OF THE LHC ENERGY EXTRACTION SWITCHGEAR

Knud Dahlerup-Petersen, Gert-Jan Coelingh, Bozhidar Panev

CERN, TE, Geneva, Switzerland

1P3 SENSITIVITY ANALYSIS FOR THE CLIC DAMPING RING INDUCTIVE ADDER

Janne Holma, Michael Barnes

CERN, TE/ABT/FPS, Geneva, Switzerland

1P4 DESIGN AND TEST OF A MODULAR TRIGGER GENERATOR FOR OVER-VOLTAGE TRIGGERING OF MARX GENERATORS

Martin Sack, Georg Mueller

Karlsruhe Institute of Technology, IHM, Eggenstein-Leopoldshafen, Germany

- 1P5 PARAMETRIC MEASUREMENTS OF SWITCHINGS LOSSES OF IGBT'S IN PULSED POWER APPLICATIONS**
Claus Strowitzki, Matthias Dahlke
 MLase AG, Development, Germering, Germany
- 1P6 A 5KV, 3MHz SOLID-STATE MODULATOR BASED ON THE DSRD SWITCH FOR AN ULTRA-FAST BEAM KICKER**
Andrew Benwell¹, Craig Burkhart¹, Anatoly Krasnykh¹, Tao Tang¹, Alexei Kardo-Sysoev²
¹SLAC National Accelerator Laboratory, Electrodynamics, Menlo Park, CA, USA, ²Ioffe Physical Technical Institute St. Petersburg, Russia
- 1P7 SOLID STATE FAST TRANSITION KICKER MODULATOR FOR ACCELERATOR APPLICATIONS**
Steven Glidden, Howard Sanders, Daniel Warnow
 Applied Pulsed Power, Inc. Freeville, NY, USA
- 1P8 NEXT GENERATION, FAST CURRENT RISE-TIME, LASER PUMPED 5kV SILICON THYRISTOR SWITCH**
Steven Glidden, Howard Sanders, Daniel Warnow
 Applied Pulsed Power, Inc. Freeville, NY, USA
- 1P9 GROUND BASED RADAR MODULATOR SOLID-STATE UPGRADE**
Sherry Hitchcock¹, Paul Holen¹, Magne Stangenes¹, Mike Garbi¹, Chris Rivers¹, Harry Anamkath¹, Randy Ross¹, Lill Runge¹, Alan Gardner², Jurgen Terry²
¹Stangenes Industries, Inc Palo Alto, CA, USA, ²Raytheon Technical Services El Segundo, CA, USA
- 1P10 AN OVERVIEW OF CONTEMPORARY SOLID-STATE MODULATOR TOPOLOGIES AND THEIR PRACTICAL PARAMETER SPACE**
Sherry Hitchcock, Richard Cassel, Magne Stangenes
 Stangenes Industries, Inc Palo Alto, CA, USA
- 1P11 OPTIMUM TERA HERTZ PULSE AMPLITUDE IN LOW TEMPERATURE GROWN GALLIUM ARSENIDE PHOTOCONDUCTIVE SWITCHES FOR POWER APPLICATIONS**
Omar Ibrahim¹, Haitham Al Saij^d, Ashwani Sharma², Clay Mayberry², P. Kirawanich³, N. E. Islam¹
¹University of Missouri - Columbia, Department of Electrical and Computer Engineering, Columbia, MO, USA, ²AFRL/RSVE Albuquerque, NM, USA, ³Mahidol University, Department of Electrical Engineering, Nakhon Pathom, Thailand

- 1P12 DESIGN AND TESTING OF WIDE BANDGAP CURRENT LIMITING DEVICES**
Nathaniel Kinsey¹, Randy Curry¹, Robert Druce¹, Heikki Helava²
¹University of Missouri, Center for Physical and Power Electronics, Columbia, MO, USA, ²Helava Systems Inc. Deer Park, NY, USA
- 1P13 DEVELOPMENT OF AN AUTOMATED TEST SETUP FOR LONG TERM SYSTEMATIC EVALUATION OF EXPERIMENTAL GATE-TURN-OFF THYRISTORS IN HIGH ENERGY PULSE APPLICATIONS**
Shelby Lacouture¹, Kevin Lawson¹, Stephen Bayne¹, Michael Giesselmann¹, Heather O'Brien², Aderinto Ogunniyi², Charles Scozzie²
¹Texas Tech University, Center for Pulsed Power and Power Electronics, Lubbock, TX, USA, ²U.S. Army Research Laboratory Adelphi, MD, USA
- 1P14 FIBER OPTIC SYSTEM FOR 50 MHZ BURST OPERATION OF A SILICON CARBIDE PHOTOCONDUCTIVE SEMICONDUCTOR SWITCH**
Daniel Mauch, Cameron Hettler, William Sullivan III, James Dickens
Texas Tech University, Center for Pulsed Power and Electronics, Lubbock, TX, USA
- 1P15 DV/DT IMMUNITY AND RECOVERY TIME CAPABILITY OF 1.0 CM² SILICON CARBIDE SGTO**
Aderinto Ogunniyi¹, Heather O'Brien¹, Charles Scozzie¹, William Shaheen², Anant Agarwal³, Lin Cheng³, Victor Temple⁴
¹U.S. Army Research Laboratory Adelphi, MD, USA, ²Berkeley Research Associate Beltsville, MD, USA, ³Cree, Inc Durham, NC, USA, ⁴Silicon Power Corporation Clifton Park, NY, USA
- 1P16 IGBT GATE DRIVER UPGRADES TO THE HVCM AT THE SNS**
Dennis Solley, David Anderson, Gunjan Patel, Mark Wezensky
Oak Ridge National Laboratory, Research Accelerator Division, Oak Ridge, TN, USA
- 1P17 HVCM TOPOLOGY ENHANCEMENTS TO SUPPORT A POWER UPGRADE REQUIRED BY A SECOND TARGET STATION AT SNS.**
Dennis Solley, David Anderson, Gunjan Patel, Mark Wezensky
Oak Ridge National Laboratory, Research Accelerator Division, Oak Ridge, TN, USA

- 1P18 ULTRA-COMPACT 100 KV SOLID-STATE SWITCH DEVELOPMENT FOR SUB-MICROSECOND DISCHARGES**
R.J. Richter-Sand¹, G. Parker¹, M. Kostora¹, S. Heidger², M. Domonkos², E. Loree³
¹SAIC Albuquerque, NM, USA, ²AFRL Albuquerque, NM, USA, ³Loree Engineering Albuquerque, NM, USA
- 1P19 AN ULTRA FAST HYBRID TOTEM POLE MOSFET/DRIVER MODULE FOR HIGH REPETITION RATE OPERATION**
Tao Tang, Craig Burkhart
 SLAC National Accelerator Laboratory Menlo Park, CA, USA
- 1P20 A COMPACT SOLID STATE MODULATOR FOR ACCELERATOR APPLICATIONS**
Kongyin Gan, Hepin Hu, Tao Li, Zhiyuan Tan
 Institute of the Applied Electronics, China Academy of Engineering Physics Miangyang, China
- 1P21 LONGEVITY OF HIGH POWER GAAS PCSS AT DC BIAS VOLTAGE**
Liu Hongwei, Liu Jinfeng, Yuan Jianqiang, Zhao Yue, Li Hongtao, Xie Weiping
 China Academy of Engineering Physics, The institute of Fluid Physics, Mianyang, China
- 1P22 DESIGN OF REPETITIVE HIGH VOLTAGE RECTANGULAR WAVEFORM PULSE ADDER**
Liuxia Li, Kefu Liu, Jian Qiu
 Fudan University, Institute of Electric Light Sources, Shanghai, China
- 1P23 ON-STATE RESISTANCE COMPARISON OF SEMI-INSULATING 6H-SIC PHOTOCONDUCTIVE SEMICONDUCTOR SWITCHES**
Jianqiang Yuan, Hongwei Liu, Jinfeng Liu, Hongtao Li, Weiping Xie
 China Academy of Engineering Physics, Institute of Fluid Physics, Mianyang, China
- 1P24 PRELIMINARY RESEARCHES ON A PLANE-BOARD EXPLOSIVE OPENING SWITCH**
Shirong Hao, Yingmin Dai, Minhua Wang, Nanchuan Zhang, Wenhui Han, Youcheng Wu
 Hydro-physics Research Institute, Academy of Engineering Physics, Si Chuan Province, Mianyang, China

- 1P25 INFLUENCE OF HYDROSTATIC PRESSURE AND TEMPERATURE ON THE WATER DIELECTRIC STRENGTH AND ON THE DYNAMIC PRESSURE WAVE**
Justin Martin¹, Thierry Reess¹, Antoine De Ferron¹, Robert Ruscassie¹, Franck Rey-Bethbeder²
¹University of Pau, SIAME, PAU, France, ²TOTAL PAU, France
- 1P26 MODELING OF THE DIELECTRIC RECOVERY OF HOT AIR IN INSULATING NOZZLES**
Andreas Kurz, Paul Gregor Nikolic, Daniel Eichhoff, Armin Schnettler
 RWTH Aachen University, Institute for High Voltage Technology, Aachen, Germany
- 1P27 INVESTIGATIONS ON THE DIELECTRIC STRENGTH OF CARBON DIOXIDE AND CARBON DIOXIDE MIXTURES FOR THE APPLICATION IN GAS INSULATED SWITCHGEAR**
Paul Gregor Nikolic, Andreas Kurz, Matthias Hoffacker, Armin Schnettler
 RWTH Aachen University, Institute for High Voltage Technology, Aachen, Germany
- 1P28 THE INFLUENCE OF CONCENTRATED HEAT FLUX ON THE DIELECTRIC PROPERTIES OF SYNTHETIC AND NATURAL ESTERS.**
Pawel Rozga
 Technical University of Lodz, Institute of Electrical Power Engineering, Lodz, Poland
- 1P29 INVESTIGATION OF AC DISCHARGES WITH WATER DROPLETS ON SOLID DIELECTRIC LAYERS**
Alper Kara, Ozcan Kalenderli, Kevork Mardikyan
 Istanbul Technical University, Electrical-Electronics Faculty, Istanbul, Turkey
- 1P30 ON THE MEASUREMENTS OF THE DIELECTRIC CONSTANT AND DISSIPATION FACTOR OF VARIOUS ELASTOMERS**
L. Nastrat¹, R.M. Sharkawy²
¹South Valley University, Electrical Power and Machines Engineering, Aswan, Egypt, ²AASTMT, Electrical and Control Engineering, Cairo, Egypt
- 1P31 CONDUCTION AND BREAKDOWN IN SYNTHETIC AND NATURAL ESTER FLUIDS**
Igor Timoshkin¹, Yi Jing¹, Martin Given¹, Mark Wilson¹, Tao Wang¹, Scott MacGregor¹, Jane Lehr²
¹University of Strathclyde, EEE, Glasgow, United Kingdom, ²Sandia NL Albuquerque, NM, USA

- 1P32 PULSED HIGH-VOLTAGE BREAKDOWN OF THIN FILM PARYLENE-C**
Juan Elizondo-Decanini, Evan Dudley
Sandia National Laboratories Albuquerque, NM, USA
- 1P33 HIGH FIELD CONDUCTION IN HEAT RESISTANT POLYMERS AT ELEVATED TEMPERATURE**
Janet Ho, T. Richard Jow
US Army Research Laboratory Adelphi, MD, USA
- 1P34 ELECTRICAL CHARACTERISTICS OF MICROPLASMA DEVICES WITH CARBON-NANOTUBES (CNT) AS THE CATHODE**
Huirong Li, Chung-Nan Tsai, Hulya Kirkici
Auburn University, Electrical and Computer Engineering, Auburn, AL, USA
- 1P35 SURFACE FLASHOVER OF NANODIELECTRICS WITH VARYING ELECTRODE ARCHITECTURES IN PARTIAL VACUUM**
Zhenhong Li, Huirong Li, Hulya Kirkici
Auburn University, Electrical and Computer Engineering, Auburn, AL, USA
- 1P36 TO ELECTRICALLY LOCATE GATE-OXIDE DEFECTS IN DUAL-GATE TECHNOLOGIES FOR VARIOUS HIGH-VOLTAGE DOMAINS**
Lixi Sheng, John Leith, Eddie Glines
ON Semiconductor, Quality, Pocatello, ID, USA
- 1P37 MECHANISM FOR STIMULATED ACOUSTIC EVENTS ASSOCIATED WITH PARTIAL DISCHARGE**
Aleta T. Wilder
The University of Texas, Cockrell School of Engineering, Austin, TX, USA
- 1P38 HIGH TEMPERATURE CAPACITORS WITH HIGH ENERGY DENSITY**
Chen Zou, Nanyan Zhang, Douglas Kushner, Raymond Orchard, Charles Mi, Shihai Zhang
Strategic Polymer Sciences, Inc., Capacitor Division, State College, PA, USA
- 1P39 EXPERIMENTAL STUDY ON SURFACE FLASHOVER CHARACTERISTICS OF INSULATING MATERIAL IN VACUUM**
Ling Dai, Fuchang Lin, Xiangyu Shi, Zhiwei Li, Cheng Su
Huazhong University of Science and Technology, State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Wuhan, China

- 1P40 SPACER FLASHOVER CHARACTERISTICS IN SF₆ UNDER REPETITIVE NANOSECOND-PULSES**
Huijuan Ran¹, Tao Wang¹, Jue Wang¹, Chengyan Ren¹, Ping Yan¹, Dongdong Zhang¹
¹Chinese Academy of Sciences, Institute of Electrical Engineering, Beijing, China, ²Graduate University of Chinese Academy of Sciences Beijing, China, ³Chinese Academy of Sciences, Key Laboratory of Power Electronics and Electric Drive, Beijing, China
- 1P41 STUDY ON SURFACE FLASHOVER AND GAS DESORPTION OF SOLID INSULATION MATERIALS IN VACUUM**
Chengyan Ren¹, Li Xiao¹, Jue Wang¹, Ping Yan¹, Dongdong Zhang¹, Yaohong Sun¹, Tao Shao¹, Tao Wang¹
¹Chinese Academy of Sciences, Institute of Electrical Engineering, Beijing, China, ²Chinese Academy of Sciences, Key Laboratory of Power Electronics and Electric Drive, Beijing, China
- 1P42 EXPERIMENTAL STUDY OF NANOSECOND-PULSE DIELECTRIC BARRIER DISCHARGE IN OPEN AIR**
Tao Shao^{1,2}, Cheng Zhang¹, Yang Yu¹, Ping Yan¹, Edl Schamiloglu²
¹Institute of Electrical Engineering, Chinese Academy of Science Beijing, China, ²Department of Electrical & Computer Engineering, University of New Mexico Albuquerque, NM, USA
- 1P43 STUDY ON THE DC SPACE CHARGE CHARACTERISTICS OF THE MULTI-LAYER OIL-PAPER INSULATION MATERIAL USED IN POWER TRANSFORMER**
Chao Tang
College of Engineering and Technology, Southwest University, Chongqing, China
- 1P44 POLLUTION FLASHOVER PERFORMANCE OF INSULATORS WITH SEMICONDUCTIVE SIR**
Xiaoxing Wei, Zhidong Jia, Zhenting Sun, Zhicheng Guan
Tsinghua University, Graduate School at Shenzhen, Shenzhen, China
- 1P45 FLASHOVER PERFORMANCE ALONE POLLUTED SURFACE OF 220KV GLASS INSULATOR STRINGS COVERED WITH NON UNIFORM PRTV COATINGS**
Chuyan Zhang¹, Shuwei Wan¹, Bao Feng², Zhiyong Wang², Liming Wang¹, Zhicheng Guan¹
¹Tsinghua University, Graduate School at Shenzhen, Shenzhen, China, ²Guangdong Power Grid Company, China Southern Power Grid, Zhongshan Power Grid Corporation, Zhongshan, China

- 1P46 NANOSECOND-PULSE DIFFUSE DISCHARGE AT ATMOSPHERIC PRESSURE**
Cheng Zhang¹, Tao Shao^{1,2}, Victor F. Tarasenko³, Hao Ma¹, Dongdong Zhang¹, Ping Yan¹, Edl Schamiloglu²
¹Institute of Electrical Engineering, Chinese Academy of Science Beijing, China, ²Department of Electrical & Computer Engineering, University of New Mexico Albuquerque, NM, USA, ³Institute of High Current Electronics, Russian Academy of Sciences Tomsk, Russia
- 1P47 RESEARCH ON SURFACE FLASHOVER PROPERTIES OF POLYMER MODIFIED BY ION IMPLANTATION**
Rong Xu¹, Ping Yan¹, Jue Wang¹, Chengyan Ren¹, Tao Shao¹, Yaohong Sun¹, Dongdong Zhang¹
¹Chinese Academy of Sciences, Institute of Electrical Engineering, Beijing, China, ²Chinese Academy of Sciences, Key Laboratory of Power Electronics and Electric Drives, Beijing, China
- 1P48 THEORETICAL ANALYSIS OF TREEING PROCESS IN MICRO AND NANO COMPOSITE INSULATORS**
Kavitha Dhinesh¹, Sindhu T Krishnan², T N Padmanabhan Nambiar¹
¹Amrita Vishwa Vidyapeetham, Electrical and Electronics Engineering, Coimbatore, India, ²National Institute of Technology Calicut, Electrical Engineering, Kozhikode, India
- 1P49 PERFORMANCE IMPROVEMENT OF GAS INSULATED SUBSTATIONS BY REDUCING THE CONTAMINATED METALLIC PARTICLE MOVEMENT**
Parthasarathy P.¹, Amarnath Jinka², Singh B.P.³
¹Guru Nanak Engineering College, Department of Electrical and Electronics Engineering, Hyderabad, India, ²JNTUH College of Engineering, Department of Electrical and Electronics Engineering, Hyderabad, India, ³St.Martin's Engineering College, Department of Electrical and Electronics Engineering, Hyderabad, India
- 1P50 IMAGE CHARGE EFFECT ON METALLIC PARTICLE MOVEMENT IN A SINGLE PHASE GAS INSULATED BUSDUCT (GIB) WITH DIELECTRIC COATED ENCLOSURE USING CHARGE SIMULATION METHOD**
Narapareddy Ramarao¹, Jinka Amarnath²
¹Nigama Engineering College, Department of Electrical and Electronics Engineering, KARIMNAGAR, India, ²JNTUH College of Engineering, Department of Electrical and Electronics Engineering, HYDERABAD, India

- 1P51 ESTIMATION OF LIFT OFF FIELD OFF AND MAXIMUM MOVEMENT PATTERN OF METALLIC CONTAMINANTS IN A 600 KV THREE PHASE COMMON ENCLOSURE GAS INSULATED BUSDUCT USING MONTE-CARLO TECHNIQUE**
Padmavathi Devasetty¹, Kamakshaiah Saprams², Amarnath Jinka³, Mani Kuchibhatla⁴
¹Vignana Bharathi Institute , *EEE, Hydeabad, India,*
²JNTUH, *EEE, Hyderabad, India,* ³JNTUH, *EEE, Hyderabad, India,* ⁴Vignana Bharathi Institute of Technology, *EEE, Hyderabad, India*
- 1P52 HIGH VOLTAGE POWER AMPLIFIER UTILIZING SERIES-CONNECTED TRANSISTORS TO CONTROL THE OUTPUT**
J.F. Tooker, P. Huynh
P.O. Box 85608, General Atomics, San Diego, CA, USA
- 1P53 A CAPACITIVE LEVEL-SHIFTER FOR HIGH VOLTAGE (2.5KV)**
Thomas Andersen, Michael A. E. Andersen, Ole C. Thomsen
Technical University of Denmark, Elektro, Lyngby, Denmark
- 1P54 BATTERY POWERED HIGH OUTPUT VOLTAGE BI-DIRECTIONAL FLYBACK CONVERTER FOR LINEAR DEAP ACTUATOR**
Lina Huang, Prasanth Thummala, Zhe Zhang, Michael Andersen
Technical University of Denmark, Electrical Engineering, Kongens Lyngby, Denmark
- 1P55 ANALYSIS OF DIELECTRIC ELECTRO ACTIVE POLYMER ACTUATOR AND ITS HIGH VOLTAGE DRIVING CIRCUITS**
Prasanth Thummala, Lina Huang, Zhe Zhang, Michael Andersen
Technical University of Denmark, Electrical Engineering, Kongens Lyngby, Denmark
- 1P56 COMPACT HIGH-VOLTAGE CAPACITOR CHARGER**
SungRoc Jang¹, HongJe Ryoo¹, Gennadi Goussev¹, SukHo Ahn², SeungBok Ok²
¹Korea Electrotechnology Research Institute , *Electric Propulsion Research Center, Changwon, Korea,* ²University of Science & Technology , *Dept. of Energy Conversion Technology, Daejeon, Korea*
- 1P57 DEVELOPMENT OF THE INVERTER HVPS FOR MODULATOR SYSTEM AT PAL-XFEL**
Soung-soo Park, Sang-hee Kim, Sei-jin Kwan, Byeong-jun Lee, Yong-jo Moon, Heung-su Lee, Heung-sik Kang, Jung-yun Hwang
Pohang Accelerator Laboratory, Accelerator, Pohang, Korea

- 1P58 NEW 13-SPACE VECTOR DIAGRAM FOR THE THREE-PHASE SIX-SWITCHES VOLTAGE SOURCE INVERTER**
Mohamed Saied
 Abu Qir Fertilizers & Chemical Industries Company (AFC)
 Alexandria, Egypt
- 1P59 AN ADJUSTABLE HVDC POWER SUPPLY USING INTEGRATED HIGH VOLTAGE TRANSFORMER WITH SOME PROTECTIVE & CONTROLLING FEATURES.**
Muhammad Muktadir Rahman
 American Intl. University- Bangladesh, Electrical and Electronic Engineering, DHAKA, Bangladesh
- 1P60 A REPETITIVE MICROSECOND-PULSE GENERATOR FOR PLASMA JET APPLICATION**
Wenfeng Li¹, Tao Shao², Weiming Huang¹, Cheng Zhang¹, Dongdong Zhang¹, Edl Schamiloglu²
¹Institute of Electrical Engineering, Chinese Academy of Science Beijing, China, ²Department of Electrical & Computer Engineering, University of New Mexico Albuquerque, NM, USA
- 1P61 HIGH-FREQUENCY HIGH-VOLTAGE DC POWER SUPPLY BASED ON PARALLEL RESONANT TECHNOLOGY AND PHASE SHIFTED CONTROL**
Kun Liu¹, Yinghui Gao¹, Ping Yan², Dongdong Zhang¹, Yaohong Sun¹
¹Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China, ²Key Laboratory of Power Electronics and Electric Drive, Chinese Academy of Sciences, Beijing, China
- 1P62 AN EFFICIENT ALL SOLID-STATE NANOSECOND PULSED GENERATOR FOR PULSED DISCHARGES**
Junfeng Rao, Kefu Liu, Jian Qiu
 Fudan University, Institute of Electric Light Sources, Shanghai, China
- 1P63 RESEARCH ON THE RELIABLE THERMAL DESIGN OF HIGH FREQUENCY HIGH VOLTAGE CHARGING POWER SUPPLY**
Xiaoxia Shi¹, Yinghui Gao¹, Dongdong Zhang¹, Yaohong Sun¹, Ping Yan¹
¹Chinese Academy of Sciences, Institute of Electrical Engineering, Beijing, China, ²Chinese Academy of Sciences, Key Laboratory of Power Electronics and Electric Drive, Beijing, China

- 1P64 DC POWER SOURCE OF ONLINE MONITORING EQUIPMENTS FOR OVERHEAD CONDUCTORS**
Ji Yang
 Chongqing Electrical Power Company, Dianjiang Branch,
 Chongqing, China
- 1P65 R&D OF 14KV/25A DC HIGH VOLTAGE POWER SUPPLY FOR TETRODE AMPLIFIER**
Wei Wang
 Nanjing Institute of Electronic Technology, Nanjing, China
- 1P66 OUTPUT FAULT PROTECTION AND INTERMEDIATE OVERLOAD DIAGNOSIS IN A "REGULATED HIGH VOLTAGE POWER SUPPLY" (80 KV, 130A)**
Pareesh Patel¹, Sumod C. B.¹, D. P. Thakkar¹, L. N. Gupta¹, V. B. Patel¹, L. K. Bansal¹, K. Qureshi¹, V. Vadher¹, N. P. Singh², U. K. Barua¹
¹Institute for Plasma Research, Neutral Beam Injector Group, SST-1, Gandhinagar, India, ²ITER-India, Power Supply Group, ITER, India, Gandhinagar, India
- 1P67 REDUCED COMMON MODE VOLTAGE IN DIRECT TORQUE CONTROLLED INDUCTION MOTOR DRIVES USING NEAR STATE PWM TECHNIQUE**
Vuyyuru Anantha Lakshmi¹, T. Bramhananda Reddy¹, Munagala Surya Kalavathi², VC Veera Reddy³
¹G.Pulla Reddy Engineering College, E.E.E, Kurnool, India,
²J.N.T.U College of Engineering, E.E.E, Hyderabad, India,
³S.V.U College of Engineering, E.E.E, Tirupathi, India
- 1P68 A NOVEL HYBRID PWM ALGORITHM FOR REDUCED COMMON MODE VOLTAGE IN DIRECT TORQUE CONTROLLED INDUCTION MOTOR DRIVES**
Vuyyuru Anantha Lakshmi¹, T. Bramhananda Reddy¹, Munagala Surya Kalavathi², VC Veera Reddy³
¹G.Pulla Reddy Engineering College, E.E.E, Kurnool, India,
²J.N.T.U College Of Engineering, E.E.E, Kurnool, India,
³S.V.U College Of Engineering, E.E.E, Kurnool, India
- 1P69 IMPLEMENTATION OF DIRECT TORQUE CONTROL OF INDUCTION MOTOR WITH SPACE VECTOR MODULATION**
Sushama Malaji
 JNTU Hyderabad, Electrical & Electronics Engineering,
 Hyderabad, India

1P70 REDUCTION OF COMPUTATIONAL COMPLEXITY IN "EKF" FOR SENSORLESS INDUCTION MOTOR DRIVE

Kamal Basha¹, B.Ravindhra Nath Reddy², Suryakalavathi Muganal³

¹MITS, EEE, Madanapalle, India, ²JNTUH, EE, Hyderabad, India, ³JNTUH, Electrical, Hyderabad, India

1P71 PERFORMANCE EVALUATION OF CLASSICAL AND FUZZY LOGIC CONTROL TECHNIQUES FOR BRUSHLESS DC MOTOR DRIVE

M. Surya Kalavathi¹, C. Subba Rami Reddy²

¹JNTU Hyderabad, Electrical and Electronics Engineering, Hyderabad, India, ²K.S.R.M College of Engineering, Electrical and Electronics Engineering, Kadapa, India

1P72 FAULT DIAGNOSIS AND TESTING OF INDUCTION MACHINE USING BACK PROPAGATION NEURAL NETWORK

Rajeswaran Nagalingam¹, Madhu Teneti², Suryakalavathi Munagala³

¹SNS College of Technology, ECE, Coimbatore, India, ²Swarnandhra Institute of Engineering and Technology, PRINCIPAL, Narasapur, India, ³Jawaharlal Nehru Technological University, EEE, Hyderabad, India

Oral Session 3: Solid State Modulators, Components and Switches 2, Power Electronics and Power Supplies

Monday, June 4, 2012 3:30 – 5:30 PM (Sapphire OP)

Session Chair: Werner Hartmann, Siemens AG

15:30 301

PERFORMANCE AND OPTIMIZATION OF A 30 KV SILICON CARBIDE PHOTOCONDUCTIVE SEMICONDUCTOR SWITCH FOR PULSED POWER APPLICATIONS

Cameron Hettler, William Sullivan III, James Dickens, Andreas Neuber

Texas Tech University, Department of Electrical and Computer Engineering, Lubbock, TX, USA

15:45 302

REDUCING TURN-ON DISSIPATION OF RSD FROM APPLICATION

*Lin Liang, Quan Wei, Wu Hong, Xueqing Liu, Yuehui Yu
Huazhong University of Science & Technology, Department of Electronic Science & Technology, Wuhan, China*

- 16:00 303**
ENHANCED VOLTAGE RECOVERY OF HIGH VOLTAGE SEMICONDUCTOR SWITCHES
J. R. Cooper¹, E. Loree², T. Konopelski³, M. Hope³, R. D. Curry⁴
¹Cooper Consulting Services, Inc. San Diego, CA, USA, ²Loree Engineering Albuquerque, NM, USA, ³M7 Electro-optics St. Louis, MO, USA, ⁴The University of Missouri Columbia, MO, USA
- 16:15 304**
THE EFFECTS OF SUB-CONTACT NITROGEN DOPING ON SILICON CARBIDE PHOTOCONDUCTIVE SEMICONDUCTOR SWITCHES
W. W. Sullivan III, C. Hettler, J. Dickens
Texas Tech University, Electrical and Computer Engineering, Center for Pulsed Power and Power Electronics, Lubbock, TX, USA
- 16:30 305**
PULSE-TO-PULSE VOLTAGE REPRODUCIBILITY EFFICIENT PREDICTION METHOD FOR HIGH PRECISION KLYSTRON MODULATOR DESIGN
Rudi Soares, Davide Aguglia
CERN - European Organization for Nuclear Research, Technology Dept., Geneva, Switzerland
- 16:45 306**
DESIGN OF AN 80KV, 40A RESONANT SWITCHMODE POWER CONVERTER FOR PULSED POWER APPLICATIONS
Paul Nonn, Andrew Seltzman, Jay Anderson
University of Wisconsin, Physics, Madison, WI, USA
- 17:00 307**
DESIGN OF A COMPACT, BATTERY-POWERED REP-RATE CHARGER FOR A 88-KJ CAPACITOR BANK FOR EML APPLICATIONS
Brett Huhman, Jesse Neri
US Naval Research Laboratory, Plasma Physics Division, Washington, DC, USA

17:15 308

**REGULATED HIGH VOLTAGE POWER SOURCES
UTILISED FOR FAST DYNAMIC LOADS LIKE
NEUTRAL BEAMS, RF HEATING SYSTEMS AND
FAST ACCELERATORS**

*Pareesh Patel¹, Sumod C.B.¹, D.P. Thakkar¹, L.N. Gupta¹,
V.B. Patel¹, L.K. Bansal¹, K. Qureshi¹, V. Vadher¹, N.P.
Singh², U.K. Barua¹*

¹*Institute for Plasma Research, Power Supplies and DAC
division, Neutral Beam Injector Group, Gandhinagar, India,*
²*ITER, India, Power Supply Group, Gandhinagar, India*

**Oral Session 4: Biological, Medical, and Environmental
Applications**

Monday, June 4, 2012 3:30 – 5:30 PM (Sapphire KL)

Session Chair: Allen Garner, General Electric

15:30 401,2 (invited)

**COMPARISON BETWEEN MONOPOLAR AND
BIPOLAR μ s RANGE PULSED ELECTRIC FIELDS IN
ENHANCEMENT OF APPLE JUICE EXTRACTION**

*Paula S. Brito¹, Hiren Canacsinh¹, João Mendes¹, Luís M.
Redondo¹, Marcos T. Pereira²*

¹*Instituto Superior de Engenharia de Lisboa, ADESPA,
Lisbon, Portugal,* ²*Lusoforma, Industria e comercio d
embalagens Mem Martins, Portugal*

16:00 403

**HIGH VOLTAGE PULSE GENERATOR BASED ON
TPI-THYRATRONS FOR PULSED ELECTRIC FIELD
MILK PROCESSING**

*Victor Bochkov¹, Dmitry Bochkov¹, Igor Gnedin¹, Yaroslav
Makeev¹, Gleb Vasiliev², Sergey Zhdanok²*

¹*Pulsed Technologies Ltd. Ryazan, Russia,* ²*A.V. Luikov Heat
& Mass Transfer Institute National Academy of Sciences of
Belarus Minsk, Belarus*

16:15 404

**CHARACTERISTICS OF CAVITATION BUBBLES
AND SHOCK WAVES GENERATED BY PULSED
ELECTRIC DISCHARGES WITH DIFFERENT
VOLTAGE AMPLITUDES**

*Daiki Oshita¹, S.H.R Hosseini², Yuta Okuda¹, Yuta
Miyamoto¹, Hidenori Akiyama^{1,2}*

¹*Kumamoto University, Graduate school of science and
technology, Kumamoto, Japan,* ²*Kumamoto University,
Bioelectrics research center, Kumamoto, Japan*

- 16:30 405**
PULSED ELECTRIC FIELD INDUCED DIELECTRIC EVOLUTION OF MAMMALIAN CELLS
Jie Zhuang^{1,2}, Yu Jing¹, Juergen F. Kolb²
¹Frank Reidy Research Center for Bioelectrics, Old Dominion University Norfolk, VA, USA, ²Leibniz Institute for Plasma Science and Technology Greifswald, Germany
- 16:45 406**
INVESTIGATING THE ROLE OF PULSE REPETITION RATE IN MODULATING CELLULAR RESPONSE TO HIGH VOLTAGE, NANOSECOND ELECTRIC PULSES
Stefania Romeo¹, Luigi Zeni¹, Anna Sannino², Maria Rosaria Scarfi², P. Thomas Vernier³, Olga Zeni²
¹Second University of Naples, Department of Information Engineering, Aversa, Italy, ²National Research Council, Institute for Electromagnetic Sensing of Environment - IREA, Napoli, Italy, ³University of Southern Californiano, Ming Hsieh Department of Electrical Engineering, Los Angeles, CA, USA
- 17:00 407**
NON-THERMAL AND TRANSIENT THERL EFFECT OF PULSED ELECTRIC FIELDS ON HELA CELLS
Kazunori Mitsutake¹, Shinya Moriyama¹, Yumi Kishita¹, Sunao Katsuki², Hidenori Akiyama¹, Tsuyoshi Shuto³, Hirofumi Kai³
¹Kumamoto University, Graduate School of Science and Technology, Kumamoto, Japan, ²Kumamoto University, Bioelectrics Research Center, Kumamoto, Japan, ³Kumamoto University, Faculty of Life Science,, Kumamoto, Japan
- 17:15 408**
ANALYSIS OF CORONA DISCHARGES IN CYLINDRICAL TOPOLOGY AND PARTICLE CHARGING MECHANISMS FOR OPTIMISATION OF PRECIPITATION EFFICIENCY
Igor Timoshkin, Athanasios Mermigkas, Martin Given, Tao Wang, Mark Wilson, Scott MacGregor
 University of Strathclyde, EEE, Glasgow, United Kingdom

Tuesday, June 5, 2012

8:30 Conference Updates (Sapphire KLOP)

Plenary 2

Tuesday, June 5, 2012 8:30 – 9:30 AM (Sapphire KLOP)

Session Chair: Craig Burkhart, SLAC National Accelerator
Laboratory

**THE EVOLUTION OF PULSED MODULATORS FROM THE
MARX GENERATOR TO THE SOLID STATE MARX
MODULATOR AND BEYOND**

Richard Cassel

Stangenes Industries Inc.

**Oral Session 5: Plasma Opening and Closing Switches,
Lasers and other Radiation Sources**

Tuesday, June 5, 2012 10:00 AM – 12:00 PM (Sapphire KL)

Session Chair: Chunqi Jiang, University of Southern California

10:00 501,2 (Invited)

**DESIGN AND PERFORMANCE OF A HIGH-
PRESSURE, FLOWING LIQUID DIELECTRIC
PEAKING SWITCH**

Rainer Bischoff

*French-German Research Institute of Saint-Louis (ISL)
Saint-Louis, France*

10:30 503

**TRIGGERED OPERATION OF A CORONA
CONTROLLED CASCADE SWITCH AT ELEVATED
PRESSURES**

*Martin J Given¹, Long Li¹, Mark P Wilson¹, Igor V
Timoshkin¹, Tao Wang¹, Scott J Macgregor¹, Jane M Lehr²
¹Strathclyde University, Electronic and Electrical Eng,
Glasgow, United Kingdom, ²Sandia National Laboratories
Albuquerque, NM, USA*

10:45 504

**LOW JITTER, HIGH VOLTAGE, REPETITIVE
LASER TRIGGERED GAS SWITCHES**

*Frank Hegeler², Matthew C. Myers¹, Matthew F. Wolford¹,
John D. Sethian¹, Andrew M. Fielding², John L. Giuliani¹
¹Naval Research Laboratory, Plasma Physics Division,
Washington, DC, USA, ²Commonwealth Technology, Inc.
Alexandria, VA, USA*

11:00 505
DISCUSSION OF BREAKDOWN MECHANISM IN TRIGATRON SPARK GAP
Li Cai, Fuchang Lin, Lee Li, Xiangdong Qi, Chaobing Bao
HuaZhong University of Science and Technology (HUST),
State Key Laboratory of Advanced Electromagnetic
Engineering and Technology, Wuhan, China

11:15 506
PERFORMANCE OF A CORONA-STABILISED SWITCH ACTIVATED BY FAST-RISING TRIGGER PULSES
Mark Wilson¹, Igor Timoshkin¹, Martin Given¹, Scott MacGregor¹, Tao Wang¹, Jane Lehi²
¹University of Strathclyde, Electronic & Electrical Engineering, Glasgow, United Kingdom, ²Sandia National Laboratories, Exploratory Pulsed Power, Albuquerque, NM, USA

11:30 507
EFFECT OF CURRENT PULSE WIDTH ON THE XENON Z-PINCH DISCHARGE PLASMA FOR EXTREME ULTRAVIOLET SOURCE
Peng Lu, Tetsuya Watanabe, Sunao Katsuki, Takashi Sakugawa, Hidenori Akiyama
Kumamoto university, Graduate School of Science and Technology, Kumamoto, Japan

11:45 508
X-RAY EMISSION FROM A TABLE-TOP X-PINCH DEVICE
Ran Zhang, Xinlei Zhu, Shen Zhao, Haiyun Luo, Xiaobing Zou, Xinxin Wang
Tsinghua University, Department of Electrical Engineering, Beijing, China

Oral Session 6: High Voltage Testing and Diagnostics

Tuesday, June 5, 2012 10:00 AM – 12:00 PM (Sapphire OP)

Session Chair: Dan Schweickart, US Air Force Wright
Patterson

10:00 601
EXPERIMENTAL IMPULSE RESPONSE OF GROUNDING SYSTEMS
Malone Castro, Euler Macedo, Edson Costa, Raimundo Freire, Maria Rodrigues, Luana Gomes
Campina Grande Federal University, Electrical Engineering, Campina Grande, Brazil

- 10:15 602**
THE EFFECTS OF TEMPERATURE, MOISTURE, TESTING VOLTAGE AND TIME DURATION ON DIELECTRIC RESPONSE OF TRANSFORMER INSULATION OIL
Maziar Shareghi, Toan Phung, Mohammad Salay Naderi, Trevor Blackburn
The University of New South Wales, School of Electrical Engineering and Telecommunications, Sydney, Australia
- 10:30 603**
A LASER DIAGNOSTIC FOR DETECTING INTERNAL ELECTRIC FIELD AND MECHANICAL STRAIN IN A RESONANT PIEZOELECTRIC TRANSFORMER
Peter Norgard¹, Scott Kovaleski¹, Greg Dale²
¹University of Missouri, Electrical and Computer Engineering, Columbia, MO, USA, ²Los Alamos National Laboratory Los Alamos, NM, USA
- 10:45 604**
THE EVOLUTION OF IEC 60034-18-41 FROM TECHNICAL SPECIFICATION TO STANDARD: PERSPECTIVES FOR MANUFACTURERS AND END USERS
Gian Carlo Montanari¹, Andrea Cavallini¹, Luca Fornasari²
¹University of Bologna, DEI, Bologna, Italy, ²Techimp HQ Spa, R&D, Zola Predosa, Italy
- 11:00 605**
RADIOMETRIC LOCATION OF ELECTRICAL DISCHARGE ACTIVITY
Martin Judd¹, Rachel Harris¹, Alistair Reid²
¹University of Strathclyde, Department of Electronic and Electrical Engineering, Glasgow, United Kingdom, ²Glasgow Caledonian University, School of Engineering and Built Environment, Glasgow, United Kingdom
- 11:15 606**
A FILTER BANK APPROACH FOR EXTRACTING FEATURES FOR THE CLASSIFICATION OF PARTIAL DISCHARGE SIGNALS IN HIGH VOLTAGE XLPE CABLES
R. Ambikairajah, B. T. Phung, J. Ravishankar, T. R. Blackburn
University of New South Wales, School of Electrical Engineering & Telecommunications, Sydney, Australia

11:30 607

GENERATION, MEASUREMENT AND APPARENT CHARGE ESTIMATION OF PARTIAL DISCHARGE SIGNALS

Diego Araújo¹, Euler Macêdo¹, Edson Costa¹, Raimundo Freire¹, José Maurício Neto¹, Waslon Lopes¹, Warner Barros¹, Ian Glover²

¹Federal University of Campina Grande, Electrical Engineering and Informatic Center, Campina Grande, Brazil, ²University of Strathclyde, Department of Electronic and Electrical Engineering, Glasgow, Scotland

11:45 608

APPLICATION HILBERT-HUANG TRANSFORM ON PARTIAL DISCHARGE PATTERN RECOGNITION OF GAS-INSULATED SWITCHGEAR

Hong-Chan Chang¹, Feng-Chang Gu¹, Cheng-Chien Kuo²

¹National Taiwan University of Science and Technology, Electrical Engineering, Taipei, Taiwan, ²Saint John's University, Electrical Engineering, Taipei, Taiwan

Poster Session 2: Biological, Medical, and Environmental Applications, Plasma Opening and Closing Switches, Lasers and Other Radiation Sources, High Voltage Testing and Design, Compact Pulsed Power, and Power Conditioning and Pulse Shaping

Tuesday, June 5, 2012 1:30 – 3:00 PM (Aqua 306/308)

Session Chair: Hao Chen, Cymer Inc.

2P1 OZONE PRODUCTION BY BARRIER DISCHARGE TYPE CONCENTRIC CYLINDER ELECTRODE USING PULSED DISCHARGE

Fumiaki Fukawa, Yuuya Satoh, Kotaro Rokkaku, Susumu Suzuki, Haruo Itoh

Chiba Institute of Technology, Electrical, Electronics and Computer Engineering, Narashino, Japan

2P2 INVESTIGATION OF NON-HEATING STERILIZATION METHOD OF PACKED FRESH FOODS BY PULSED ELECTRIC FIELD

Takato Higuchi, Yasushi Minamitani

Graduate School of Science and Engineering, Yamagata University, 4-3-16 Jonan Yonezawa, Yamagata 992-8510, Japan

- 2P3 INVESTIGATION OF QUANTITY OF ACTIVE SPECIES GENERATED BY PULSED STREAMER DISCHARGES IN THE AREA WITH DROPLETS FOR WATER TREATMENT**
Takashi Saito, Yasushi Minamitani
 Graduate School of Science and Engineering, Yamagata University, 4-3-16 Jonan, Yonezawa, Yamagata 992-8510, Japan
- 2P4 SPECTROSCOPIC OBSERVATION OF MICRO PLASMA JETS GENERATED BY PULSED POWER**
Makoto Inokuchi, Takashi Sakugawa, Hidenori Akiyama
 Kumamoto University, Graduate School of Science and Technology, Kumamoto, Japan
- 2P5 BURST ELECTROMAGNETIC WAVE FOCUSING SYSTEM FOR MEDICAL APPLICATION**
Hidetoshi Ishizawa, Masanori Hashimoto, Takashi Tanabe, Hamid Hosseini, Sunao Katsuki, Hidenori Akiyama
 Kumamoto University, Graduate School of Science and Technology, Kumamoto, Japan
- 2P6 INVESTIGATION OF OZONE PRODUCTION USING NANOSECOND PULSED POWER FOR DENSE OZONE**
Ryo Mabuchi, Tatsuya Kageyama, Kenji Teranishi, Naoyuki Shimomura
 The University of Tokushima, Department of Electrical and Electronic Engineering, Tokushima, Japan
- 2P7 DECOMPOSITION OF HUMATE USING PULSED DISCHARGE IN BUBBLES**
Yuuya Satoh, Fumiaki Fukawa, Kotaro Rokkaku, Susumu Suzuki, Haruo Itoh
 Chiba Institute of Technology, Electrical, Electronics and Computer Engineering, Narashino, Japan
- 2P8 DEVELOPMENT OF TECHNIQUES APPLYING NANOSECOND PULSE ELECTRIC FIELDS ON SOLID TUMOR**
Naoyuki Shimomura, Yoshihiro Magori, Masataka Nagahama, Kenji Teranishi, Yoshihiro Uto, Hitoshi Hori
 The University of Tokushima, Institute of Technology and Science, Tokushima, Japan
- 2P9 APPLICATION TO WATER TREATMENT OF PULSED HIGH-VOLTAGE GENERATOR USING SEMICONDUCTOR OPENING SWITCH**
Taichi Sugai¹, Akira Tokuchi¹, Weihua Jiang¹, Yasushi Minamitani²
¹Nagaoka University of Technology, Extreme Energy-Density Research Institute, Nagaoka, Japan, ²Yamagata University, Department of Electrical Engineering, Yonezawa, Japan

- 2P10 PORE DYNAMICS INDUCED BY nsPEF: A COMPARISON BETWEEN EXPERIMENTAL AND THEORETICAL RESULTS**
Patrizia Lamberti¹, Stefania Romeo³, Maria Rosaria Scarfi², Vincenzo Tucci¹, Olga Zeni²
¹University of Salerno, Dept. of Electronic and Computer Engineering, Fisciano (SA), Italy, ²CNR, Institute for Electromagnetic Sensing of Environment (IREA), Napoli, Italy, ³Second University of Naples, Dept. of Information Engineering, Aversa (CE), Italy
- 2P11 NON-INVASIVE PULSED ELECTRIC FIELD FOOD PROCESSING: PROOF-OF-PRINCIPLE EXPERIMENTS**
Bucur Novac¹, Fahd Banakhr¹, Ivor Smith¹, Laurent Pecastaing², Robert Ruscassie², Antoine de Feron², Pascal Pignolet²
¹Loughborough University, School of Electronic, Electrical and Systems Engineering, Loughborough, United Kingdom, ²University de Pau, SIAME, Equipe Genie Electrique, Heliopare Pau, France
- 2P12 HIGH BLOOD SUGAR CONCENTRATION RESPONSE TO 850 MHz ELECTROMAGNETIC RADIATION USING GTEM CELLS**
Nattaphong Boriraksantikul¹, Naz Islam¹, Kiran Bhattacharyya², John Viator², Phumin Kirawanich³
¹University of Missouri-Columbia, Department of Electrical and Computer Engineering, Columbia, MO, USA, ²University of Missouri-Columbia, Department of Biological Engineering, Columbia, MO, USA, ³Mahidol University, Department of Electrical Engineering, Nakhon Pathom, Thailand
- 2P13 COMPACT PULSER POWER FOR PLATELET AGGREGATION AND GROWTH FACTOR RELEASE**
Yeong-Jer Chen, Barbara Hargrave, Shu Xiao, Karl Schoenbach
 Old Dominion University, Bioelectronics, Norfolk, VA, USA
- 2P14 MODELING OF DELIVERY OF SUBNANOSECOND ELECTRIC PULSES INTO BIOLOGICAL TISSUES**
Shu Xiao^{1,2}, Fei Guo¹, Fei Li², Jiang Li², Gene Hou³
¹Old Dominion University, Frank Reidy Research Center for Bioelectronics, Norfolk, VA, USA, ²Old Dominion University, Department of Electrical and Computer Engineering, Norfolk, VA, USA, ³Old Dominion University, Department of Mechanical and Aerospace Engineering, Norfolk, VA, USA

- 2P15 CONCRETE SURFACE SCRAPING WITH HIGH VOLTAGE PULSED POWER GENERATOR**
Alexander Nashilevskiy¹, Gennady Kanaev², Vladimir Kukhta³, Vladimir Lopatin¹, Gennady Remnev¹, Kensuke Uemura³, Ivan Egorov¹
¹National Research Tomsk Polytechnic University, Institute of High-Technology Physics, Tomsk, Russia, ²National Research Tomsk Polytechnic University, Institute of Physics and Technology, Tomsk, Russia, ³Nagata Seiki Co., Ltd. Niigata, Tsubame, Japan
- 2P16 STUDY OF THE EFFICIENCY OF A PULSED ELECTRIC FIELD SYSTEM FOR LIQUID STERILIZATION: A STATISTICAL APPROACH**
Eduardo Araujo, Ivan Lopes
 Federal University of Minas Gerais, Electrical Engineering, Belo Horizonte, Brazil
- 2P17 EXPERIMENTAL STUDY ON CHARGES TRANSPORTATION IN NANOSECOND-PULSED SURFACE DIELECTRIC BARRIER DISCHARGE**
Hui Jiang¹, Tao Shao^{1,2}, Cheng Zhang¹, Wenfeng Li¹, Ping Yan¹, Edl Schamiloglu²
¹Institute of Electrical Engineering, Chinese Academy of Science Beijing, China, ²Department of Electrical & Computer Engineering, University of New Mexico Albuquerque, NM, USA
- 2P18 HYDROPHOBIC IMPROVEMENT OF PMMA SURFACE TREATED BY A NANOSECOND-PULSE PLASMA JET**
Zheng Niu¹, Cheng Zhang¹, Tao Shao^{1,2}, Jiayu Xu¹, Ping Yan¹, Edl Schamiloglu²
¹Institute of Electrical Engineering, Chinese Academy of Science Beijing, China, ²Department of Electrical & Computer Engineering, University of New Mexico Albuquerque, NM, USA
- 2P19 A NOVEL METHOD TO CALCULATE THE SHOCK WAVE PROPAGATION AND OPTIMIZATION OF PRESSURE RELIEF IN SF₆ CIRCUIT BREAKERS**
Mahdi Khanali¹, Kaveh Niayesh²
¹University of Waterloo, ECE, Waterloo, ON, Canada, ²University of Tehran, ECE, Tehran, Iran
- 2P20 A HIGH CURRENT LOW INDUCTANCE MULTI-GAP MULTI-CHANNEL SWITCH FOR MICROSECOND LINEAR TRANSFORMER DRIVER, WORKING UNDER ATMOSPHERIC DRY AIR INSULATION AT 80KV, 250KA LEVEL**
Francis Lassalle, Bernard Roques, Arnaud Loyer, Alain Morell
 CEA DAM GRAMAT, F-46500, Gramat, France

- 2P21 DEVELOPMENT OF A HIGH CURRENT GAS-SWITCH FOR THE MAGNETIC HORN OF THE FAIR P-BAR-EXPERIMENT**
Christian Hock, Marcus Iberler, Joachim Jacoby, Gregor Loisch, Andreas Schönlein, Jörg Wiechula
 Goethe University, Institute of Applied Science, Frankfurt, Germany
- 2P22 RESEARCH AND DEVELOPMENT OF DRIVERS FOR PSEUDOSPARK SWITCHES**
Victor Bochkov¹, Dmitry Bochkov¹, Yaroslav Makeev¹, Piotr Bak², Alexey Panov², Chris Pihl³, Sam Andreason³
¹Pulsed Technologies Ltd. Ryazan, Russia, ²Budker Institute of Nuclear Physics Novosibirsk, Russia, ³Pulse Power Solutions LLP Mill Creek, WA, USA
- 2P23 POWER TRIGGERED VACUUM SWITCH FOR 50 HZ NETWORKS**
Vladimir Sidorov, Dmitriy Alferov, Roman Bunin, Dmitriy Evsin, Valeriy Ivanov
 Russian Electrotechnical Institute Moscow, Russia
- 2P24 PARALLEL OPERATION OF FOUR SPARK GAPS IN A PULSER SYSTEM**
Hasibur Rahaman¹, Byung-Joon Lee¹, Jong Woo Nam¹, Sang Hoon Nam¹, Jae Woon Ahn², Seung Whan Jo², Hae Ok Kwon²
¹POSTECH, Pohang Accelerator Laboratory, Pohang, South Korea, ²Hanwha Corporation, R & D Department, Gumi, South Korea
- 2P25 CRITICAL CIRCUIT PARAMETERS IN PRODUCING A TOROIDAL AIR PLASMA**
Adam Lodes¹, Randy Curry¹, W. Brown², M. Schmidt²
¹University of Missouri, Center for Physical and Power Electronics, Columbia, MO, USA, ²Applied Research Associates Arlington, VA, USA
- 2P26 SELECTIVELY GROWN CARBON NANOTUBES (CNTs): CHARACTERIZATION AND FIELD EMISSION PROPERTIES**
Chung-Nan Tsai, Hulya Kirkici
 Auburn University, Electrical and Computer Engineering, Auburn, AL, USA
- 2P27 NONLINEAR FOWLER-NORDHEIM PLOTS OF CARBON NANOTUBES UNDER VACUUM AND PARTIAL PRESSURES**
Rujun Bai, Hulya Kirkici
 Auburn University, Electrical and Computer Engineering, Auburn, AL, USA

- 2P28 AN ATMOSPHERIC PRESSURE GAS SWITCH TRIGGERED BY ARRAY MICROHOLLOW CATHODE DISCHARGE**
Yaqing Teng, Kefu Liu, Jian Qiu
 Fudan University, Institute of Electric Light Sources,,
 Shanghai, China
- 2P29 EXPERIMENTAL RESEARCH OF HIGH STABILITY GAS DISCHARGING SWITCH**
Xueling Yao, Jingliang Chen, Yingbiao Shao
 Xi'an Jiaotong University, Electrical Engineering, Xi'an,
 China
- 2P30 EXPERIMENTAL RESEARCH OF ROD-SHAPED GAS DISCHARGING SWITCH**
Xueling Yao, Jingliang Chen, Yuxi Wang
 Xi'an Jiaotong University, Electrical Engineering, Xi'an,
 China
- 2P31 DEVELOPMENT OF A COLLIDING PLASMA EXPERIMENT AS AN UV/VUV RADIATION SOURCE**
Andreas Schönlein, Christian Hock, Marcus Iberler, Joachim Jacoby, Johanna Otto, Tim Rienecker, Christian Teske, Sero Zaehner
 Goethe University, Institute of Applied Physics, Frankfurt,
 Germany
- 2P32 X-RAY BACKLIGHTING OF SINGLE-WIRE AND MULTI-WIRE Z-PINCH**
Xinlei Zhu, Ran Zhang, Haiyun Luo, Shen ,Zhao, Xiaobing Zou, Xinxin Wang
 Tsinghua University, Department of Electrical Engineering,
 Beijing, China
- 2P33 TIMING OF THE X-RAY BURST FROM PARALLELED X-PINCHES**
Shen Zhao, Haiyun Luo, Xinlei Zhu, Ran Zhang, Xiaobing Zou, Xinxin Wang
 Tsinghua University, Department of Electrical Engineering,
 Beijing, China
- 2P34 EVALUATION OF TAPE-BASED STRESS GRADING COATINGS BY INFRARED THERMOGRAPHY**
Fermin P. Espino-Cortes, Tomas I. Asiain Olivares, Pablo Gomez
 Instituto Politecnico Nacional, SEPI ESIME Electrical
 Department , Mexico City, Mexico

- 2P35 DETECTION AND LOCATION OF ARCING FAULTS IN DISTRIBUTION NETWORKS USING A NON-CONTACT APPROACH**
Rachel Harris¹, Philip Moore², Martin Judd¹
¹University of Strathclyde, High Voltage Technologies Research Group, Glasgow, United Kingdom, ²Elimpus Ltd Bellshill, United Kingdom
- 2P36 ASSESSMENT OF DIELECTRIC DEGRADATION BY MEASUREMENT, PROCESSING AND CLASSIFICATION OF PARTIAL DISCHARGES**
Euler C. T. Macedo¹, Juan M. Villanueva², Diego B. Araujo², Edson G. da Costa², Raimundo C. S. Freire², José M. R. de Souza Neto², Ian A. Glover³
¹Paraíba Federal University, Alternative and Renewable Energy Center, João Pessoa, Brazil, ²Campina Grande Federal University, Electrical Engineering and Informatics Center, Campina Grande, Brazil, ³University of Strathclyde, Department of Electronic and Electrical Engineering, Glasgow, Scotland
- 2P37 ITAIPU'S EXPERIENCE IN THE ACCEPTANCE TESTS FACTORY CARRIED OUT ON HIGH VOLTAGE ELECTRICAL EQUIPMENTS (EMPHASIS ON TRANSFORMERS AND BUSHINGS): RELEVANT FACTS OCCURRED DURING VFT - VERY FAST TRANSIENT TEST, PARTIAL DISCHARGES MEASUREMENT, DISPLACEMENT/DEFORMATION CORE OF POWER TRANSFORMER AND GENERAL CONDITIONS OF HIGH VOLTAGE LABORATORIES**
Cláudio Morais¹, Domingues Gonzalez², Juliano Silva³, Luiz Pisa³
¹Itaipu Binacional, Inspection, Foz do Iguaçu, Brazil, ²Itaipu Binacional, Engineering, Ciudad del Este, Paraguay, ³Itaipu Binacional, Engineering, Foz do Iguaçu, Brazil
- 2P38 PERFORMANCE EVALUATION OF A NEW SYSTEM GROUNDING**
Maria Alice Rodrigues, Edson Costa, Malone Castro
 Federal University of Campina Grande (PB-Brazil), Electrical Engineering Department, Campina Grande, Brazil
- 2P39 A STUDY ON RELIABILITY BASED ASSESSMENT ALGORITHM FOR HIGH VOLTAGE INDUCTION MOTOR STATOR WINDINGS**
Chang Jeong-Ho¹, Lee Heung-Ho²
¹Korea Water Resources Corporation, Green Technology Research Center, Daejeon, Korea, ²Chungnam National University, Electrical Engineering, Daejeon, Korea

- 2P40 DETERMINING ECONOMIC LIFE CYCLE FOR POWER TRANSFORMER BASED ON LIFE CYCLE COST ANALYSIS**
Sun Hun Lee¹, An Kyu Lee¹, Jin O Kim²
¹Korea Water Resources Corporation, K-Water Institute, Deajeon, Korea, ²Hanyang University, Dept. of Electrical Engineering, Seoul, Korea
- 2P41 REAL-TIME INSULATION STATUS ASSESSMENT OF UNDERGROUND CABLE JOINTS BASED ON STANDARD DEVIATION**
RuayNan Wu, ChienKuo Chang
National Taiwan University of Science and Technology, Electrical Engineering, Taipei, Taiwan
- 2P42 DETERIORATION TREND ON ELECTRICAL TREEING OF UNDERGROUND CABLE INSULATION**
RuayNan Wu, ChienKuo Chang
National Taiwan University of Science and Technology, Electrical Engineering, Taipei, Taiwan
- 2P43 RESEARCH OF NANOSECOND PULSE RESISTIVE DIVIDER**
Jingliang Chen, Xueling Yao, Shaolin He, Tianyu Lin
¹Xi'an Jiaotong University, Electrical Engineering, Xi'an, China
- 2P44 RESEARCH ON ROGOWSKI COIL FOR MEASURING 10/350MS PULSE CURRENT**
Jingliang Chen¹, Xueling Yao¹, Antong Chen², Xiaoqing Xu¹
¹State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Electrical Engineering, Xi'an, China, ²Vanderbilt University, Electrical Engineering and Computer Science, Nashville, TN, USA
- 2P45 RESEARCH OF TRANSFORMER CONDITION ASSESSMENT SYSTEM BASED ON RISK EVALUATION**
Lu Guo-jun, Li Gang, Qin Yu, Huang Yan-guang
Guangzhou Power Supply Bureau, Tests and Research Institute, Guangzhou, China
- 2P46 MEASUREMENT AND ANALYSIS OF INSULATION RESISTANCE OF METALIZED POLYPROPYLENE FILM CAPACITOR UNDER HIGH ELECTRIC FIELD**
Hua Li, Zhiwei Li, Fuchang Lin, Yaohong Chen, De Liu
Huazhong University of Science and Technology, State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Wuhan, China

- 2P47 A STUDY OF OVER-VOLTAGE MONITORING DEVICE BASED ON COUPLING CAPACITANCE SENSORS**
Qi Wang¹, Chen-guo Yao¹, Yan Mi¹, Jian Wang²
¹Chongqing University, State Key Laboratory of Transmission & Distribution Equipment and Power System Safety and New Technology, Chongqing, China, ²State Grid Corporation of China, EHV Transmission & Substation Company, Chengdu, China
- 2P48 THE LIGHTNING PROTECTION TESTS FOR THE RADOME IN Z11 HELICOPTER OF CHINA**
Duan Zemin
Hefei Hangtai Electrophysics Co., Lt Hefei, China
- 2P49 PROTECTION OF 132 KV TRANSFORMER AGAINST LIGHTNING BY EFFECTIVE PLACEMENT OF SURGE ARRESTER**
Radhika Goru¹, Suryakalavathi Mungala²
¹Vnr Vjiet, Eee, Hyderabad, IN, India, ²Jntuh, Eee, Hyderabad, IN, India
- 2P50 A COMPACT LOW INDUCTANCE PULSE ENERGY DRIVER SYSTEM FOR PULSE POWER APPLICATIONS**
Kum Sang Low¹, Albert Ng¹, Chee Hoong Low¹, Chin Yang Chia¹, Kum Wan Low¹, David Mahadevan¹
¹Specscan Sdn. Bhd. Petaling Jaya, Malaysia, ²University of Malaya, Department of Physics, Kuala Lumpur, Malaysia
- 2P51 GENERATORS OF HIGH-POWER HIGH-FREQUENCY PULSES BASED ON SEALED-OFF DISCHARGE CHAMBERS WITH HOLLOW CATHODE**
Victor Bochkov¹, Vladimir Ushich¹, Alexander Dubinov², Inna Kornilova², Igor L'vov², Sergey Sadovoy², Victor Selemir², Dmitry Vyalykh², Victor Zhdanov²
¹Pulsed Technologies Ltd. Ryazan, Russia, ²Russian Federal Nuclear Center – All-Russian Research Institute for Experimental Physics Sarov, Russia
- 2P52 SOLID-STATE PULSED POWER SYSTEM FOR GAS TREATMENT APPLICATIONS**
Seung-Bok Ok¹, Hong-Je Ryoo², Sung-Roc Jang², Gennadi Goussev²
¹University of Science and Technology, Energy Conversion Technology, Daejeon, South Korea, ²Korea Electrotechnology Research Institute, Electric Propulsion Research Center, Changwon, South Korea

- 2P53 COMPACT HV HIGH POWER CAPACITOR CHARGER**
Willy Debache, Michael Teboul
 TECHNIX, Development, CRETEIL, France
- 2P54 COMPACT 600 KV MULTI-PRIMARY WINDINGS RESONANT TRANSFORMER TO DRIVE AN ELECTROMAGNETIC SOURCE**
Romain Pecquois¹, Laurent Pécastaing¹, Marc Rivaletto¹, Antoine de Ferron¹, Jean-Marc Duband², Laurent Caramelle², René Vézinet³
¹Université de Pau, SIAME EGE, Pau, France, ²HI PULSE Pont de Pany, France, ³DAM, CEA GRAMAT, Gramat, France
- 2P55 HIGH REPETITION RATE PICOSECOND FID PULSE GENERATORS FOR UWB APPLICATIONS**
Vladimir Efanov, Mikhail Efanov, Alexander Komashko, Pavel Yarin
 FID GmbH Burbach, Germany
- 2P56 DEVELOPMENT OF A RF BURST PULSE GENERATOR USING A NON-LINEAR TRANSMISSION LINE FOR CANCER TREATMENT**
Yuichi Abe, Yasushi Minamitani
 Graduate School of Science and Engineering, Yamagata University, Department of Electrical Engineering, 4-3-16 Jonan, Yonezawa, Yamagata 992-0026, Japan
- 2P57 A 600V, 1KA COMPACT LTD MODULE USING POWER MOSFETS**
Pravin Tyengar¹, Tee Chong Lim¹, Stephen Finney¹, Mark Sinclair²
¹University of Strathclyde, Electronic and Electrical Engineering, Glasgow, United Kingdom, ²Atomic Weapons Establishment, Pulsed Power Group, Aldermaston, United Kingdom
- 2P58 STATUS OF PROTOGEN THE FIRST INTEGRATION OF GENESIS TECHNOLOGIES**
Steven Glover¹, Forest White², Gary Pena¹, Peter Foster³, Larry Schneider¹
¹Sandia National Laboratories Albuquerque, NM, USA, ²SAIC Albuquerque, NM, USA, ³Defense Nuclear Facilities Safety Board Washington, DC, USA
- 2P59 STATUS AND EXPERIMENTS WITH THE 1-MA WATER-INSULATED MYKONOS LTD VOLTAGE ADDER**
Michael Mazarakis¹, Mark Savage¹, William Fowler¹, William Stygar¹, Scott Roznowski¹, Alexander Kim²
¹Sandia National Laboratories, 1671, Albuquerque, NM, USA, ²High Current Electronic Institute, Pulsed Power, Tomsk, Russia

- 2P60 LINEAR TRANSFORMER DRIVER (LTD) WITH SQUARE PULSE OUTPUT**
Michael Mazarakis², Alexander Kim¹, Alexander Sinebbryukhov¹, S. Volkov¹, S. Kondratief¹, Frederic Bayol³, Gauthier Demol³, V. Alexcenco¹, William Stygar²
¹Institute of High Current Electronics, Russian Academy of Sciences, Pulsed Power, Russian Academy of Sciences, Tomsk 634055, Russia, ²Sandia National Laboratory, 1671, Albuquerque, NM, USA, ³International Technologies for High Pulsed Power, Pulsed Power, Thegra 46500, France
- 2P61 MODIFICATIONS TO A COMPACT MARX GENERATOR**
Kim Morales
 NSWC Dahlgren, Q, Dahlgren, VA, USA
- 2P62 RAPID CAPACITOR CHARGING POWER SUPPLY FOR AN 1800J PFN**
Travis Vollmer, Michael Giesselmann
 Texas Tech University, Center for Pulsed Power & Power Electronics, Lubbock, TX, USA
- 2P63 A SHORT-RISE-TIME PULSE GENERATOR USING LASER TRIGGERED SPARK GAP SWITCH**
Yuan Li, Jin Li, Xin Li, Debiao Chen, Hui He, Zhi Zhou, Mao Chen, Fuxin Zhou
 Institute of Fluid Physics, Department of Accelerator Physics and Applications, Mianyang, China
- 2P64 DEVELOPMENT OF BRAUNBECK COILS FOR PULSED MAGNETIC FIELD GENERATOR FOR BIOMEDICAL EXPOSURE**
Yan Mi, Chun Jiang, Longxiang Zhou, Chenguo Yao, Chengxiang Li
 Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing, China
- 2P65 THE PERFORMANCE OF A PHOTOCONDUCTIVE SEMICONDUCTOR SWITCH TRIGGERED BY A LASER DIODE**
Baojie Wang, Kefu Liu, Liuxia Li, Jian Qiu
 Fudan University, Electric Light Sources, Shanghai, China
- 2P66 AN NS RISE TIME GAS SWITCH WITH A MOVABLE ELECTRODE AND A FIXED ELECTRODE**
Xiaobing Zou, Kun Huang, Xinxin Wang, Ran Zhang, Xinlei Zhu, Shen Zhao
 Tsinghua University, Department of Electrical Engineering, State Key Laboratory of Control and Simulation of Power System and Generation Equipment, Beijing, China

2P67 EXPERIMENTS ON COMPACT PULSE FORMING LINE USING WATER DIELECTRIC HELICAL TRANSMISSION LINE

*Pankaj Deb, Surender Sharma, Biswajit Adhikari, Rohit Shukla, T. Prabaharan, Partha Banerjee, Rishi Verma, Anurag Shyam
Bhabha Atomic Research Centre, Department of Atomic Energy, Vishkapatnam, India*

2P68 OPERATIONAL RESULTS OF PULSE SHAPING TECHNIQUES FOR THE HIGH VOLTAGE CONVERTER MODULATOR

*Gunjan Patel, David Anderson, Dennis Solley, Mark Wezensky
Oak Ridge National Laboratory, Spallation Neutron Source, Oak Ridge, TN, USA*

2P69 DESIGN AND TEST OF INDUCTION VOLTAGE ADDER DERIVED BY 3 BLUMLEIN PFLS

*Hoon Heo¹, Oh Ryoung Choi¹, Sang Hoon Nam¹, Jong Won Yang², Jong Hyo Won³
¹Pohang Accelerator Laboratory Pohang, Korea, ²ADD Daejeon, Korea, ³LIG Nex1 Seongnam, Korea*

2P70 HIGH-VOLTAGE VACUUM ELECTRONIC SWITCHES FOR POWER ELECTRONICS

*Vladimir Perevodchikov, Pavel Stalkov, Ivan Trukhachev, Valentina Shapenko, Alexander Scherbakov
Federal State Unitary Enterprise "All-Russian Electrotechnical Institute named after V.I.Lenin" (FGUP VEI) Moscow, Russia*

2P71 ELECTRIC EXPLOSIVE OPENING SWITCH TECHNOLOGY

*Wu Youcheng, Hao Shirong, Yang Yu, Geng Lidong, Wang Minhua, Zhang Nanchuan
Institute of Fluid Physics, High Pulsed Power Technology and Application, Mianyang, China*

Oral Session 7: Compact Pulsed Power Systems

Tuesday, June 5, 2012 3:30 – 5:30 PM (Sapphire OP)

Session Chair: Mike Mazarakis, Sandia National Laboratories

15:30 7O1,2 (invited)

COMMISSIONING AND POWER FLOW STUDIES OF THE 2.5-MEV URSA MINOR LTD

*Josh Leckbee¹, Tim Pointon¹, Steve Cordova¹, Bryan Oliver¹, Martial Toury², Michel Caron²
¹Sandia National Laboratories, Advanced Radiographic Technologies, Albuquerque, NM, USA, ²Commissariat à l'Énergie Atomique Pontfaverger, Moronvilliers, France*

- 16:00 703**
SOLID-STATE LTD TECHNOLOGY FOR COMPACT PULSED-POWER DEVELOPMENT
Weihua Jiang, Akira Tokuchi
 Nagaoka University of Technology, Extreme Energy-Density Research Institute, Nagaoka, Japan
- 16:15 704**
DEVELOPMENT OF THE 1 MV/100 kA FAST LTD GENERATOR
Lin Chen, Wenkang Zou, Liangji Zhou, Meng Wang, Weiping Xie
 Institute of Fluid Physics, Pulsed Power Laboratory, Mianyang, China
- 16:30 705**
REPETITIVE TESLA-CHARGED PFL AND BLUMLEIN PULSED POWER GENERATORS
Bucur Novac, Ivor Smith, Peter Senior
 Loughborough University, School of Electronic, Electrical and Systems Engineering, Loughborough, United Kingdom
- 16:45 706**
SOLID DIELECTRIC TRANSMISSION LINES FOR PULSED POWER
Matt Domonkos¹, Susan Heidger¹, Darwin Brown², Tommy Cavazos², Alan Devoe³, Fatih Dogan⁴, Don Gale², Jim O'Loughlin¹, Jerald Parker², Dan Sandoval², Kirk Slenes⁵, Wayne Sommars², Jack Watrous⁶
¹AFRL Kirtland AFB, NM, USA, ²SAIC Albuquerque, NM, USA, ³Presidio Components San Diego, CA, USA, ⁴Missouri University of Science and Technology Rolla, MO, USA, ⁵TPL, Inc. Albuquerque, NM, USA, ⁶NumerEx, LLC Albuquerque, NM, USA
- 17:00 707**
A COMPACT, PHASEABLE MW-CLASS HIGH POWER MICROWAVE SYSTEM USING AN INTEGRATED PHOTOCONDUCTIVE SWITCH AND NONLINEAR TRANSMISSION LINE
Cameron Hettler, James-William Bragg, William Sullivan III, Daniel Mauch, James Dickens, Andreas Neuber
 Texas Tech University, Center for Pulsed Power and Power Electronics, Lubbock, TX, USA
- 17:15 708**
COMPACT PICOSECOND PULSE GENERATORS WITH GIGAWATT PEAK POWER
Vladimir Efanov, Mikhail Efanov
 FID GmbH Burbach, Germany

**Oral Session 8: High Voltage Design and Analysis,
Accelerators, Radar, and RF
Applications, Reliability and Transient
Suppression**

Tuesday, June 5, 2012 3:30 – 5:30 PM (Sapphire KL)

Session Chair: Andreas Neuber, Texas Tech University

15:30 801

**PRELIMINARY NUMERICAL STUDY ON
DIELECTRIC MIXTURES UNDER LIGHTNING
IMPULSE CONDITIONS**

*Enis Tuncer, Chris Calebrese, Weijun Yin
GE Global Research, Dielectrics & Electrophysics Lab,
Niskayuna, NY, USA*

15:45 802

**EVOLUTION OF PLASMA DENSITY GENERATED
BY HIGH POWER MICROWAVES**

*Sterling Beeson, James Dickens, Andreas Neuber
Texas Tech University, Center for Pulsed Power and Power
Electronics, Lubbock, TX, USA*

16:00 803

**BEHAVIOR OF HV CABLE AT SHORT CIRCUIT
AND RELATED PHENOMENA**

*Alex Pokryvailo, Cliff Scapellati
Spellman High Voltage Electronics Corp. Hauppauge, NY,
USA*

16:15 804

**FLEXIBLE 50-OHM HIGH-VOLTAGE
NANOSECOND PULSE GENERATOR**

*Sophie Kohler, Saad El Amari, Vincent Couderc, Delia
Arnaus-Cormos, Philippe Leveque
University of Limoges, XLIM UMR 6172 CNRS, Limoges,
France*

16:30 805

**COMPACT 110-MW MODULATOR FOR C-BAND
HIGH GRADIENT ACCELERATOR**

*Takahiro Inagaki¹, Chikara Kondo¹, Katsutoshi Shirasawa¹,
Tatsuyuki Sakurai¹, Yuji Otake¹, Tsumoru Shintake²
¹RIKEN, SPring-8 Center, Hyogo, Japan, ²OIST Okinawa,
Japan*

16:45 806

SOME CONSIDERATIONS TO THE ITER SNUBBERS

*Ge Li
Institute of Plasma Physics, Chinese Academy of Sciences
Hefei, China*

17:00 807
**A NEW TRIGGERING TECHNOLOGY BASED ON
INDUCTIVE TRANSFORMER FOR LTD SWITCHES**
Yu Lei, Kefu Liu, Jian Qiu, Zhuolin Tu
Fudan University, Electric Light Sources, Shanghai, China

17:15 808
**SUSCEPTIBILITY OF ELECTRO-EXPLOSIVE
DEVICES TO HIGH PULSED ELECTRIC FIELDS**
David Reale, John Mankowski, James Dickens
*Texas Tech University, Center for Pulsed Power & Power
Electronics, Lubbock, TX, USA*

Wednesday, June 6, 2012

8:15 Conference Updates (Sapphire KLOP)

Plenary 3

Wednesday, June 6, 2012 8:30 – 9:30 AM (Sapphire KLOP)

Session Chair: Juergen Kolb, INP Greifswald

PLS-II AS THE LEADING KOREAN ACCELERATOR PROJECT AND ITS ROLE FOR MEGA-SCIENCE ACCELERATOR PROJECTS IN KOREA

Sang Hoon Nam
Pohang Accelerator Laboratory, Pohang, Korea

Oral Session 9: High Current Systems and EM Launchers

Wednesday, June 6, 2012 10:00 AM – 12:00 PM (Sapphire KL)

Session Chair: Brett Huhman, Naval Research Laboratory

10:00 901 **THE COLLIDING TORI FUSION REACTOR: PROOF OF PRINCIPLE EXPERIMENT**

*Michael Anderson¹, Vitaly Bystritskii¹, Ivan Isakov¹, Vasily
Matvienko¹, Francesco Giammanco², Tommaso Del Rosso²,
Michl Binderbauer¹, Lucia Bonelli³, Hiroshi Gota¹, Frank
Jauregui¹, Cheryl Johnson¹, Enrico Paganini³, Mark
Rouillard¹, George Strashnoy¹, William Waggoner¹, Kurt
Walters¹*

*¹Tri Alpha Energy, Inc., Pulsed Power Physics, Foothill
Ranch, CA, USA, ²University of Pisa, Physics, Pisa, Italy,
³ENEL Pisa, Italy*

- 10:15 902**
**ATMOSPHERIC ELECTROMAGNETIC
PLASMA DYNAMIC SYSTEM FOR INDUSTRIAL
APPLICATIONS**
*Yuri Chivell¹, Victor Bochkov², Dmitry Bochkov², Yury
Gryshin³, Valery Suslov³, Vladimir Vermel⁴*
*¹MerPhotonics Saint Etienne, France, ²Pulsed Technologies
Ltd. Ryazan, Russia, ³Pulsed Technologies Ltd. Ryazan,
Russia, ⁴Bauman University Moscow, Russia, ⁵Bauman
University Moscow, Russia, ⁶TsAGI Moscow, Russia*
- 10:30 903**
**PROGRESS TOWARD A SELF-CONTAINED RAPID
CAPACITOR CHARGER FOR A SMALL RAILGUN
IN BURST MODE OPERATION AT 3 RPS**
*Raymond Allen¹, Craig Boyer², Jesse Neri¹, Michael
Veracka³, Brett Huhman¹*
*¹Naval Research Laboratory, Plasma Physics Division,
Washington, DC, USA, ²L3 Communications/Titan Group
Reston, VA, USA, ³Naval Research Laboratory, Tactical
Electronic Warfare Division, Washington, DC, USA*
- 10:45 904**
**ANALYSIS AND SIMULATION OF
ELECTROMAGNETIC COIL LAUNCH SYSTEM**
Jiange Zhang¹, Zan Lu¹, James E. Thompson², Naz E. Islam¹
*¹University of Missouri-Columbia, Electrical & Computer
Engineering, Columbia, MO, USA, ²University of Missouri-
Columbia, College of engineering, Columbia, MO, USA*
- 11:00 905**
**MEASUREMENT OF SOLID ARMATURE'S IN-BORE
VELOCITY USING B-DOT PROBES IN
AUGMENTED RAILGUN**
Song Shengyi, Cheng Cheng, Guan Yongchao, He Yong
*Institute of Fluid Physics, CAEP, Laboratory for Pulsed
Power Technology, Mianyang, China*
- 11:15 906**
**EXPERIMENTAL RESULTS FROM THE
DESTRUCTIVE TESTING OF MULTI-LAYER PZT
FERROELECTRIC GENERATORS**
Allen Stults
US Army, AMRDEC, Redstone Arsenal, AL, USA

11:30 907
**EXPERIMENTAL AND THEORETICAL STUDIES OF
A FLYER-PLATE ELECTROMAGNETIC
ACCELERATOR**

*Kaashif Omar¹, Neal Graneau¹, Mark Sinclair¹, Bucur
Novac², Ivor Smith², Peter Senior²*

*¹AWE, Hydrodynamics Department, Aldermaston, United
Kingdom, ²Loughborough University, School of Electronic,
Electrical and Systems Engineering, Loughborough, United
Kingdom*

11:45 908
**OPTIMIZATION OF NONUNIFORM TRANSMISSION
LINE WITH A GAUSSIAN IMPEDANCE PROFILE BY
CIRCUIT SIMULATION**

*Rui Zhang, Chongyang Mao, Kun Hunag, Xiaobing Zou,
Xinxin Wang*

*Tsinghua University, Department of Electrical Engineering,
Beijing, China*

**Oral Session 10: High Power Microwaves, Radiating
Structures, and Electromagnetic
Propagation**

Wednesday, June 6, 2012 10:00 AM – 12:00 PM (Sapphire OP)

Session Chair: Steve Calico, Lockheed Martin

10:00 1001
**VIRTUAL PROTOTYPING A MEGAWATT CLASS
CONVENTIONAL MAGNETRON**

*Michael Lambrecht, Timothy Fleming, Peter Mardahl
Air Force Research Laboratory, Directed Energy
Directorate, Kirtland AFB, NM, USA*

10:15 1002
**RECIRCULATING PLANAR MAGNETRON
EXPERIMENTS AND SIMULATIONS**

*Ronald Gilgenbach¹, Matthew Franzi¹, Yue-Ying Lau¹, David
Chalenski¹, David Simon¹, Brad Hoff², David French², Geoff
Greening², John Luginsland³*

*¹University of Michigan, Nuclear Eng. & Radiological
Sciences, Ann Arbor, MI, USA, ²Air Force Research Lab,
Directed Energy Directorate, Kirtland AFB, NM, USA, ³Air
Force Office of Scientific Research, Plasma &
Electroenergetic Physics, Arlington, VA, USA*

- 10:30 1003**
**SERIAL ARRANGEMENT OF FERRIMAGNETIC
NONLINEAR TRANSMISSION LINES**
James-William Bragg, Christopher Simmons, James Dickens,
Andreas Neuber
Center for Pulsed Power and Power Electronics, Texas Tech
University, Department of Electrical and Computer
Engineering, Lubbock, TX, USA
- 10:45 1004**
**GENERATING OSCILLATING PULSES USING
NONLINEAR CAPACITIVE TRANSMISSION LINES**
Ngee Siang Kuek¹, Ah Choy Liew¹, Edl Schamiloglu², Jose
Osvaldo Rossi³
¹National University of Singapore, Department of Electrical
& Computer Engineering, Singapore, Singapore, ²University
of New Mexico, Department of Electrical & Computer
Engineering, Albuquerque, NM, USA, ³National Institute for
Space Research, Associated Plasma Laboratory, Sao Jose
dos Campos, Brazil
- 11:00 1005**
**3D FDTD SIMULATION OF A NLTL USING
FERROELECTRIC MATERIALS IN RECTANGULAR
WAVEGUIDE**
Byron Caudle, Michael Baginski, Hulya Kirkici
Auburn University, Electrical and Computer Engineering,
Auburn, AL, USA
- 11:15 1006**
**GAS EVOLUTION OF NICKEL, STAINLESS STEEL
316, AND TITANIUM ANODES IN VACUUM SEALED
TUBES**
Jonathan Parson, James Dickens, Andreas Neuber, John
Walter, Magne Kristiansen
Texas Tech University, Electrical and Computer
Engineering, Lubbock, TX, USA
- 11:30 1007**
**THREE-DIMENSIONAL PARTICLE-IN-CELL
SIMULATION OF SUB-TERAHERTZ HIGH-POWER
GYROTRON**
Koyu Ito, Weihua Jiang
Nagaoka University of Technology, Extreme Energy-Density
Research Institute, Nagaoka, Japan
- 11:45 1008**
**A DIELECTRIC RESONATOR ANTENNA BASED ON
HIGH DIELECTRIC CONSTANT COMPOSITES FOR
HIGH POWER, UHF ANTENNA APPLICATIONS**
Kevin O'Connor, Randy Curry
University of Missouri-Columbia, Center for Physical and
Power Electronics, Columbia, MO, USA

Poster Session 3: High Voltage Design and Analysis, Accelerators, Radars, and RF Applications, Reliability and Transient Suppression, High Current Systems and EM Launchers, High Power Microwaves, Radiating Structures, and Electromagnetic Propagation, Analytical Methods, Modeling, and Simulation, Prime Power and Power Systems, Energy Storage Devices and Components, High Energy Systems

Wednesday, June 6, 2012 1:30 – 3:00 PM (Aqua 306/308)

Session Chair: David Wetz, University of Texas, Arlington

- 3P1 PULSED VOLTAGE DRIVEN ELECTROSPRAY**
Daichi Obata¹, Asuki Nakamura¹, Sunao Katsuki², Hidenori Akiyama¹
¹Kumamoto University, Graduate School of Science and Technology, Kumamoto, Japan, ²Kumamoto University, Bioelectronics Research Center, Kumamoto, Japan
- 3P2 OPTIMIZATION OF CORONA RING DESIGN FOR COMPOSITE INSULATOR STRINGS USING KRIGING METAMODELING AND DIRECT ALGORITHMS**
Hanyu Ye, Markus Clemens
Universität Wuppertal, Chair of Electromagnetic Theory, Wuppertal, Germany
- 3P3 DEVELOPMENT OF SMALL DIMENSION HIGH-VOLTAGE ELECTRONIC VACUUM DEVICES**
Victor Bochkov¹, Dmitry Bochkov¹, Vladimir Nicolaev¹, Vasilii Teryoshin¹, Piotr Panov¹, Alexandr Batrakov², Konstantin Karlik², Grigory Ozur², Dmitry Proskurovsky²
¹Pulsed Technologies Ltd Ryazan, Russia, ²Institute of High Current Electronics RAS Tomsk, Russia
- 3P4 OPTIMIZATION OF A CATHODE CONFIGURATION IN GAS INSULATED SWITCHGEAR WITH A PERMITTIVITY GRADED INSULATOR**
Chi-Wuk Gu, Jae-Ho Rhee, Heung-Jin Ju, Kwang-Cheol Ko
Hanyang University, Dept. of Electrical Engineering, Seoul, South Korea
- 3P5 INTERRUPTING CAPABILITY OF VACUUM INTERRUPTER BY VARIOUS PARAMETERS**
Chi-Wuk Gu¹, Kun-A Lee¹, Heung-Jin Ju¹, Kwang-Cheol Ko¹, Cheol-Kyou Lee²
¹Hanyang University, Dept. of Electrical Engineering, Seoul, South Korea, ²Vitzrotech Co., Ltd. Ansan, South Korea

- 3P6 EFFECTS OF CAPACITIVE VERSUS RESISTIVE LOADING ON HIGH TRANSFORMATION RATIO PIEZOELECTRIC TRANSFORMERS FOR MODULAR DESIGN CONSIDERATIONS**
James VanGordon¹, Brady Gall¹, Peter Norgard¹, Scott Kovaleski¹, Emily Baxter¹, Baek Kim¹, Jae Kwon¹, Gregory Dale²
¹University of Missouri, Electrical and Computer Engineering, Columbia, MO, USA, ²Los Alamos National Laboratory, Accelerator Operations and Technology - High Power Electrodynamics, Los Alamos, NM, USA
- 3P7 DEVELOPMENT OF 100kV BIPOLAR CAPACITOR CHARGING SYSTEM**
Yinghui Gao¹, Kun Liu¹, Yaohong Sun¹, Dongdong Zhang¹, Ping Yan¹
¹Chinese Academy of Sciences, Institute of Electrical Engineering, Beijing, China, ²Chinese Academy of Sciences, Key Laboratory of Power Electronics and Electric Drive, Beijing, China
- 3P8 DESIGN AND TEST OF 2250KV SEMI-FLEXIBLE SF₆ INSULATED HIGH VOLTAGE IMPULSE TRANSMISSION LINE**
Kun Wang¹, Xupeng Song², Jingbo Zhang², Gensheng Lu², Kefu Liu¹
¹Fudan University, Institute of Electric Light Sources, Shanghai, China, ²China Electronic Technology Group Corporation, No.23 Research Institute, Shanghai, China
- 3P9 FDTD ANALYSIS OF LIGHTNING TRANSIENT ELECTROMAGNETIC FIELD ON THE TRANSMISSION LINE**
Hao Wu, Chen-guo Yao, Qian-bo Xiao, Yan Mi, Chen-xiang Li, Jian Li
 State Key Laboratory of Power Transmission Equipment & System Security and New technology, College of Electric Engineering Chongqing University, Chongqing, China
- 3P10 NUMERICAL MODELING OF UHV LABORATORY TO EVALUATE THE RATING OF HV EQUIPMENT**
Adusumilli Pradeep¹, Shreeharsh Mallick², H S Jain¹
¹Bharat Heavy Electricals Limited, High Voltage Engineering, Hyderabad, India, ²University of Florida, Lightning Research Group, Gainesville, FL, USA
- 3P11 STUDY OF LIGHTNING INDUCED OUTAGE IMPROVEMENT FOR A 220KV TRANSMISSION LINE.**
Goru Radhika¹, Mungala Suryakalavathi²
¹VNR VJIEET, EEE, Hyderabad, India, ²JNTU, EEE, Hyderabad, India

- 3P12 ELECTRIC FIELD STRESS ANALYSIS ON THE SURFACE OF A COMPOSITE CONE TYPE SPACER IN GAS INSULATED SUBSTATION FOR A FIXED SPHERICAL AND A WIRE LIKE PARTICLE**
Duvvada Deepak Chowdary¹, Jinka Amarnath²
¹Dr.L.B.College of Engineering For Women, Electrical & Electronics Engineering, Visakhapatnam, India, ²Jawaharlal Nehru Technological University, Electrical & Electronics Engineering, Hyderabad, India
- 3P13 ANALYSIS TO CORE SNUBBER BASED ON DELTAMAX**
Fei Xie^{1,2}, Hongwen Yuan¹, Ge Li¹, Desheng Cheng¹, Jinling Chen¹, Qiangjian Chen¹
¹Chinese Academy of Sciences, Institute of Plasma Physics, Anhui, China, ²Shunde Polytechnic, Department of Electronic and Information Engineering, Shunde, China
- 3P14 MHZ-LEVEL REPETITIVE MODULATORS FOR ACCELERATOR APPLICATIONS**
Weihua Jiang, Akira Tokuchi
 Nagaoka University of Technology, Extreme Energy-Density Research Institute, Nagaoka, Japan
- 3P15 DEVELOPMENT OF HIGH PERFORMANCE ELECTRON BEAM SWITCHING SYSTEM FOR SWISS FREE ELECTRON LASER AT PAUL SCHERRER INSTITUTE**
Martin Paraliiev, Christopher Gough
 Paul Scherrer Institute, Large research facilities , Villigen PSI, Switzerland
- 3P16 A STABILITY OF LCLS LINAC MODULATORS**
Anatoly Krasnykh, Franz-Josef Decker, Ben Morris, Minh Nguyen
 SLAC National Accelerator Lab Menlo Park, CA, USA
- 3P17 SNS LEBT CHOPPER PULSE WIDTH LIMITATION**
Vladimir Pepløy, Robert Saethre
 ORNL Oak Ridge, TN, USA
- 3P18 KLYSTRON MODULATOR DESIGN FOR THE LOS ALAMOS NEUTRON SCIENCE CENTER ACCELERATOR**
William Reass, David Baca, Daniel Rees, Edward Partridge
 Los Alamos National Laboratory, AOT-RFE, Los Alamos, NM, USA

- 3P19 INJECTOR SYSTEM FOR THE POLISH SYNCHROTRON RADIATION FACILITY 'SOLARIS'**
Piotr Tracz¹, C.J. Bocchetta¹, P. Goryl¹, L. Walczak¹, A. Wawrzyniak¹, M. Eriksson², D. Kumbaro², L. Malmgren², J. Mooder², S. Thorin²
¹The Jagiellonian University, SOLARIS, Krakow, Poland,
²The Lund University, MAX-lab, Lund, Sweden
- 3P20 A HIGH-REPETITION RATE PULSED ELECTRON ACCELERATOR**
Gennady Remnev, Ivan Egorov, Marat Kaikanov, Evgeny Lukonin, Victor Esipov, Artem Poloskov
 Tomsk Polytechnic University, High Technology Physics Institute, Tomsk, Russia
- 3P21 30 KV COAXIAL PULSED PLASMA ACCELERATOR FOR DIAGNOSTICS AND APPLICATIONS OF MATERIAL PROCESSING**
Anuar Zhukeshov, Assem Amrenova, Asylgul Gabdullina
 Kazakh National University, Physics Faculty, Almaty, Kazakhstan
- 3P22 SNS LEBT CHOPPER FAILURE MODES AND IMPROVEMENTS**
Robert Saethre, Vladimir Peplov
 Oak Ridge National Laboratory, Research Accelerators Division, Oak Ridge, TN, USA
- 3P23 EMI NOISE REDUCTION IN INTEGRATED 6 KHZ SOLID STATE PULSED POWER SYSTEM**
Hao Chen, Byron Yakimow, Paul Melcher
 Cymer Inc San Diego, CA, USA
- 3P24 METHOD OF CURRENT TRANSFORMER METROLOGICAL PROPERTIES ESTIMATION FOR TRANSFORMATION OF DISTORTED SIGNALS**
Michal Kaczmarek
 Technical Univeristy of Lodz, Instytute of Electrical Power Engineering, Lodz, Poland
- 3P25 ANALYSIS OF THE INFLUENCE OF THE LEVEL OF SIGNAL DISTORTION ON CURRENT ERROR AND PHASE DISPLACEMENT OF INDUCTIVE CURRENT TRANSFORMERS**
Kaczmarek Michal
 Technical Univeristy of Lodz, Instytute of Electrical Power Engineering, Lodz, Poland

- 3P26 AN EMPIRICAL STUDY ON EVALUATION METHOD FOR AGING MEDIUM LARGE POWER TRANSFORMER**
Chang Jeong-Ho¹, Lee Sung-Hun¹, Oh Seung-Chan², Lee Hyo-Sung³, Lee Heung-Ho³
¹Korea Water Resources Corporation, Daejeon, Korea, ²Corporation Korea Atomic Energy Research Institute, , Daejeon, Korea, ³Chungnam National University Daejeon, Korea
- 3P27 INVESTIGATIONS INTO NON-DESTRUCTIVE MODIFICATION OF CAPACITOR BANK OUTPUT INDUCTANCE AT THE NRL MATERIALS TESTING FACILITY**
Brett Huhman¹, Richard Cairns², Scott Douglass², Jess Neri¹
¹US Naval Research Laboratory, Plasma Physics Division, Washington, DC, USA, ²Soterra Defense, Inc, Crofton, MD, USA
- 3P28 SHOCK COMPRESSION OF GAS-IMPREGNATED SOLIDS**
David Rice, Scott Kovaleski, John Gahl
 University of Missouri, Electrical Engineering, Columbia, MO, USA
- 3P29 EXPERIMENTAL RESULTS OF EXTREMELY COMPACT FERROELECTRIC GENERATOR BASED PULSED SYSTEMS**
Allen Stults¹, Sergey Shkuratov², Jason Baird²
¹US Army, AMRDEC, Redstone Arsenal, AL, USA, ²Loki Rolla, MO, USA
- 3P30 ANALYSIS TO THE EAST NBI TRANSMISSION LINES**
Cheng Desheng, Li Ge, Cao Lei, Xie Fei
¹Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, China
- 3P31 AN ACTIVE JITTER DAMPER OF SWITCHES OF LTD BASED ON TRANSFORMER COUPLING EFFECT**
Yue Zhao, Liangji Zhou, Lin Chen, Meng Wang
 China Academy of Engineering Physics, Institute of Fluid Physics, Mianyang, China
- 3P32 COMPACT ELECTRIC POWER SYSTEM FOR TOKAMAK**
Ge Li
 Institute of Plasma physics, Chinese Academy of Sciences Hefei, China

- 3P33 SOME PROBLEMS OF SLIDING CONTACT IN RAILGUN ("VELOCITY SKIN-EFFECT" AND HALL-EFFECT IN MICRO-PLASMA)**
Volodymyr Chemerys
National Aviation University of Ukraine, Theoretical Physics, Kyiv, Ukrenia
- 3P34 THE PRINCIPLE OF MAGNETIC FLUX COMPRESSION IN THE PULSED ELECTROMECHANICAL GENERATORS AND ITS IMPLEMENTATION IN DESIGN**
Volodymyr Chemerys
National Aviation University of Ukraine, Theoretical Physics, Kyiv, Ukrenia
- 3P35 EFFECTS OF ELECTROMAGNETIC PULSES ON A SYSTEM WITH MULTIPLE LAYERS OF DIFFERENT MATERIALS**
Antonio Upia¹, Daniel Muffoletto¹, Mark Muffoletto¹, Brett Bowman¹, Kevin Burke¹, Jennifer Zirnheld¹, Harry Moore², Hardev Singh², Thomas DeAngelis³
¹The University at Buffalo, Energy Systems Institute, Buffalo, NY, USA, ²US Army Military, ARDEC, Picatinny Arsenal, NJ, USA, ³SciTech Services, Inc. Havre de Grace, MD, USA
- 3P36 FREQUENCY AGILITY OF A FERRITE-LOADED, NONLINEAR TRANSMISSION LINE**
Christopher Simmons, James-William Bragg, James Dickens
Texas Tech University, Department of Electrical And Computer Engineering, Lubbock, TX, USA
- 3P37 PROSPECTS OF BUILDING CAPACITIVE NONLINEAR LINES USING CERAMIC PZT FOR HIGH-FREQUENCY OPERATION**
Jose Osvaldo Rossi¹, Fernanda Sayuri Yamasaki¹, Lauro Paulo da Silva Neto¹, Edl Schamiloglu²
¹INPE, Associated Plasma Laboratory, Sao Jose dos Campos, Brazil, ²UNM, ECE Dept, Albuquerque, NM, USA
- 3P38 X-BAND RELATIVISTIC BACKWARD WAVE OSCILLATOR WITH TWO-SPIRAL CORRUGATED BRAGG REFLECTOR**
A. Elfrgani, M. Fuks, S. Prasad, E. Schamiloglu
University of New Mexico, Electrical and Computer Engineering, Albuquerque, NM, USA
- 3P39 ELECTRIC CIRCUIT MODELING METHODS OF ELECTROMAGNETIC SHOCK WAVE IN AIR FOR HIGH POWER MICROWAVE PROPAGATION**
Kun-A Lee, Jong-Yoon Park, Kwang-Cheol Ko
Hanyang University, Dept. of Electrical Engineering, Seoul, South Korea

- 3P40 OPEN TRANSVERSE ELECTROMAGNETIC (TEM) CELL AS APPLICATOR OF HIGH-INTENSITY NS PEFs AND ELECTRO-OPTIC MEASUREMENTS**
Sophie Kohler¹, Thao Vu¹, Thomas Vernier², Delia Arnaud-Cormos¹, Philippe Leveque¹
¹University of Limoges, XLIM UMR 6172 CNRS, Limoges, France, ²Information Sciences Institute, MOSIS, California, CA, USA
- 3P41 A PIEZOELECTRICALLY DRIVEN ION DIODE NEUTRON SOURCE FOR ACTIVE INTERROGATION**
Peter Norgard, Scott Kovaleski, James VanGordon, Emily Baxter, Brady Gall, Jae Kwon, Baek Kim
 University of Missouri, Electrical and Computer Engineering, Columbia, MO, USA
- 3P42 CARRIER DYNAMICS AND ELECTRON ENERGY DISTRIBUTION FUNCTION OF A TRANSVERSE VIRCATOR**
Shen Shou Max Chung¹, Yien Chieh Huang², Ci Ling Pan¹
¹National Tsing Hua University, Department of Physics, Hsinchu, Taiwan, ²National Tsing Hua University, Institute of Photonics Technologies, Hsinchu, Taiwan
- 3P43 SHAPES OF GRATINGS AND BEAM ENERGY RELATIONSHIP IN A 100 MEV SMITH-PURCELL DEVICE**
Shen Shou Max Chung¹, Yien Chieh Huang², Ci Ling Pan¹
¹National Tsing Hua University, Department of Physics, Hsinchu, Taiwan, ²National Tsing Hua University, Institute of Photonics Technologies, Hsinchu, Taiwan
- 3P44 INNOVATIVE SOLUTIONS TO HPM TESTING**
Russell Blundell
 White Sands Missile Range, Survivability Vulnerability & Assessment Directorate, White Sands, NM, USA
- 3P45 INVESTIGATIONS INTO THE POTENTIAL FOR SURFACE FLASHOVER ON METAMATERIAL STRUCTURES IN AN HPM ENVIRONMENT**
Patrick Kelly, John Mankowski, Stephen Bayne
 Center for Pulsed Power and Power Electronics, Electrical and Computer Engineering, Lubbock, TX, USA
- 3P46 COMPARISON OF CSI COATED CARBON VELVET AND ALUMINUM CATHODES OPERATED AT CURRENT DENSITY ON THE ORDER OF 300A/CM²**
Curtis Lynn, John Walter, Andreas Neuber, James Dickens, Magne Kristiansen
 Texas Tech University, Electrical Engineering, Lubbock, TX, USA

- 3P47 AN ARBITRARY-GEOMETRY PULSED RF SOURCE ARRAY SYSTEM BASED ON GPS TIMING**
John Walter, Christopher Lutrick, Scott Clark, Shad Holt, David Reale, Patrick Kelly, James Dickens, John Mankowski
 Texas Tech University, Center for Pulsed Power and Power Electronics, Lubbock, TX, USA
- 3P48 STOCHASTIC MODEL OF METAL OXIDE SURGE ARRESTERS BASED ON SYSTEM IDENTIFICATION**
Pablo Bezerra Vilar, George Rossany Soares Lira, Tarso Vilela Ferreira, Edson Guedes da Costa
 Federal University of Campina Grande, Department of Electric Engineering, Campina Grande, Brazil
- 3P49 PSPICE MODELING OF SILICON CARBIDE MOSFETS AND DEVICE PARAMETER EXTRACTION**
Argenis Bilbao, Stephen Bayne
 Texas Tech University, Electrical and Computer Engineering, Lubbock, TX, USA
- 3P50 PULSED POWER SWITCH MODELING FOR BROAD OPERATION**
Steven Glover¹, Peter Foster², Dillon McDaniel¹, Forest White³, Gary Pena¹, Larry Schneider¹
¹Sandia National Laboratories Albuquerque, NM, USA, ²Defense Nuclear Facilities Safety Board Washington, DC, USA, ³SAIC Albuquerque, NM, USA
- 3P51 ANALYTIC SOURCES USING POLYNOMIAL SHAPED PARTICLES IN THE LTP METHOD**
Robert Jackson¹, John Verboncoeur²
¹Calabazas Creek Research, Inc. San Mateo, CA, USA, ²Michigan State University, Electrical and Computer Engineering, East Lansing, MI, USA
- 3P52 ANALYSIS OF CURRENT-DIVIDING POST-HOLE CONVOLUTES FOR SIX LINES DRIVING THREE TRIODES ON SATURN**
E. A. Madrid¹, D. V. Rose¹, C. L. Miller¹, V. Harper-Slaboszewicz²
¹Voss Scientific Albuquerque, NM, USA, ²Sandia National Laboratories, Albuquerque, NM, USA
- 3P53 REPETITIVE PULSE TESTING AND MODELING OF A HIGH POWER CERAMIC RESISTOR**
Daniel Muffoletto, Kevin Burke, Jennifer Zirnheld
 University at Buffalo, Energy Systems Institute, Buffalo, NY, USA

- 3P54 DYNAMIC BIFURCATION ANALYSIS OF
ADVANCED AIRCRAFT ELECTRIC POWER
SYSTEM (AAEPS) WITH NONLINEAR LOADING**
Hadi Ebrahimi, Hassan El-Kishky
The University of Texas at Tyler, Electrical Engineering,
Tyler, TX, USA
- 3P55 A NOVEL GENERALIZED AVERAGING
TECHNIQUE FOR THE MODELING OF
CONTROLLERS IN AN AAEPS MULTI-CONVERTER
SYSTEM**
Hadi Ebrahimi, Hassan El-Kishky
The University of Texas at Tyler, Electrical Engineering,
Tyler, TX, USA
- 3P56 AN EMI MODEL OF HIGH FREQUENCY AND HIGH
VOLTAGE CAPACITOR CHARGING POWER
SUPPLY CONSIDERING TRANSIENT SWITCHING
INTERFERENCE BASED ON SABER**
Xiao Han³, Yinghui Gao¹, Dongdong Zhang², Yaohong Sun¹,
Ping Yan²
¹Chinese Academy of Sciences, Institute of Electrical
Engineering, Beijing, China, ²Chinese Academy of Sciences,
Key Laboratory of Power Electronics and Electric Drive,
Beijing, China, ³Chinese Academy of Sciences, Graduate
School, Beijing, China
- 3P57 MODELING AND SIMULATION OF MULTIPACTOR
DISCHARGE ON DIELECTRIC WINDOW UNDER
HPM IN VACUUM**
Guan-Jun Zhang, Bai-Peng Song, Xi-Wei Hao
Xi'an Jiaotong University, School of Electrical Engineering,
Xi'ab, China
- 3P58 SIMULATION OF PULSED ELECTROMAGNETIC
PROCESSES IN MULTI-LAYER PACKAGE OF
INDUCTOR CORE OF INDUCTION
ACCELERATORS OF ELECTRONS**
Volodymyr Chemerys, Iren Borodiy
National Aviation University of Ukraine, Theoretical Physics,
Kyiv, Ukrenia
- 3P59 HIGH VOLTAGE DIRECT CURRENT
TRANSMISSION – A REVIEW, PART I**
Mohamed Saied
Abu Qir Fertilizers & Chemical Industries Company (AFC)
Alexandria, Egypt
- 3P60 HIGH VOLTAGE DIRECT CURRENT
TRANSMISSION – A REVIEW, PART II –
CONVERTER TECHNOLOGIES**
Mohamed Saied
Abu Qir Fertilizers & Chemical Industries Company (AFC)
Alexandria, Egypt

- 3P61 CPF, TDS BASED VOLTAGE STABILITY ANALYSIS USING SERIES, SHUNT AND SERIES–SHUNT FACTS CONTROLLERS FOR GENERATOR OUTAGE CONTINGENCY**
Surya Kalavathi¹, Naveen Kumar²
¹JNTUH, EEE, Hyderabad, India, ²VNRVJIET, EEE, Hyderabad, India
- 3P62 OPTIMAL LOCATION AND PARAMETER SETTING OF UPFC FOR POWER SYSTEM VOLTAGE STABILITY ENHANCEMENT USING DIFFERENTIAL EVOLUTION(DE) ALGORITHM**
Surya Kalavathi Munagala¹, Balachennaiah Pagidi²
¹JNTUH, EEE Department, Hyderabad, India, ²A.I.T.S, EEE Department, Rajampet, India
- 3P63 OPTIMAL POWER FLOW ANALYSIS OF ANDHRA PRADESH STATE GRID IN DEREGULATED ENVIRONMENT**
Sunilkumar Chava¹, Amarnath Jinka², Subramanyams³
¹CVR COLLEGE OF ENGINEERING, EEE, HYDERABAD, India, ²JNTUH, EEE, HYDERABAD, India, ³VBIT, EEE, HYDERABAD, India
- 3P64 ROLE OF FACTS DEVICES ON ZONAL CONGESTION MANAGEMENT ENSURING VOLTAGE STABILITY UNDER CONTINGENCY**
Jami Sridevi¹, Jinka Amarnath², Gade Govinda Rao³
¹Gokaraju Rangaraju Institute of Engineering And Technology, Electrical and Electronics Engineering, Hyderabad, India, ²Jawaharlal Nehru Technological University, Electrical and Electronics Engineering, Hyderabad, India, ³Gayatri Vidya Parishad College of Engineering, Electrical and Electronics Engineering, Hyderabad, India
- 3P65 INFLUENCE OF HEAT TREATMENT ON PROPERTIES OF HIGH-CURRENT METALLIZED FILM CAPACITORS**
Kong Zhonghua, Xu Bei, Tong Chunya, Lou Zaipei
 School of Electronic and Information Engineering, Ningbo University of Technology, Ningbo, China
- 3P66 DEVELOPMENT AND PERFORMANCE OF HIGH TEMPERATURE POWER CONVERSION CAPACITORS**
J. R. MacDonald, J. B. Ennis, M. A. Schneider
 General Atomics Electronic Systems, Inc., Capacitor Research and Development, San Diego, CA, USA

- 3P67 DROOP RELATED LIFETIME REDUCTION OF POLYPROPYLENE FILM CAPACITOR IN A PULSED POWER APPLICATION**
Tao Tang¹, Mark Kemp¹, Craig Burkhart¹
¹SLAC National Accelerator Laboratory Menlo Park, CA, USA, ²SLAC National Accelerator Laboratory, RF Accelerator Research and Engineering, Menlo Park, CA, USA
- 3P68 LIFETIME TESTING OF AIRIX ACCELERATING UNITS**
Alain Georges, Hervé Dzitko, Marc Mouillet, Rémi Nicolas, Denis Reynaud
 CEA, DIF, ARPAJON, France
- 3P69 A MOBILE HIGH-POWER, HIGH-ENERGY PULSED-POWER SYSTEM**
Bucur Novac¹, Michael Parker¹, Ivor Smith¹, Peter Senior¹, Gerasimos Louverdis²
¹Loughborough University, School of Electronic, Electrical and Systems Engineering, Loughborough, United Kingdom, ²Dstl, Security Sciences Department, Sevenoaks, United Kingdom
- 3P70 CAPACITOR DROOP COMPENSATION WITH SOFT SWITCHING FOR HIGH VOLTAGE CONVERTER MODULATOR**
Michael Bland¹, William Reass¹, Alex Scheinker¹, Ji Chao², Pericle Zanchetta², Alan Watson², Jon Clare²
¹Los Alamos National Laboratory, AOT-RFE, Los Alamos, NM, USA, ²The University of Nottingham, Electrical & Electronic Engineering, Nottingham, United Kingdom
- 3P71 COHERENCE EFFECTS**
Lutfi Oksuz, Ali Gulec, Erdogan Teke, Ferhat Bozduman, Suleyman Demirel Universitesi, Fizik Bolumu, Isparta, Turkey

Oral Session 11: Analytical Methods, Modeling, and Simulations

Wednesday, June 6, 2012 3:30 – 5:30 PM (Sapphire KL)

Session Chair: Matthew Aubuchon, General Atomics

- 15:30 11O1,2 (Invited) LINEAR-INDUCTION-ACCELERATOR BEAM-ENERGY-SPREAD MINIMIZATION: CELL MODELS AND TIMING OPTIMIZATION**
C. R. Rose, C. Ekdahl, M. Schulze
 Los Alamos National Laboratory, WX-5, Los Alamos, NM, USA

- 16:00 1103**
**THERMAL MODELING OF HIGH TEMPERATURE
POWER CONVERSION CAPACITORS**
J. R. MacDonald
*General Atomics Electronic Systems, Inc., Capacitor
Research and Development, San Diego, CA, USA*
- 17:00 1104**
**FDTD MODELING OF FAST TRANSIENT
CURRENTS IN HIGH VOLTAGE CABLES**
Xiao Hu, Martin D. Judd, Wah H. Siew
*University of Strathclyde, Department of Electronic and
Electrical Engineering, Glasgow, United Kingdom*
- 16:30 1105**
**ELECTROMAGNETIC MODELLING OF HIGH
PRESSURE SPARK GAP PEAKING SWITCH**
Mrunal Parekh, Bindu Sreedevi, H.A. Mangalvedekar
VJTI, VJTI-SEIMENS HIGH VOLTAGE LAB, Mumbai, India
- 16:45 1106**
**ESTIMATIONS OF THE ENERGY AVAILABLE TO A
BREAKDOWN CHANNEL AS IT PROPAGATES
THROUGH A DIELECTRIC MEDIUM**
Martin J Given¹, Igor V Timoshkin¹, Yiming Gao¹, Mark P
Wilson¹, Tao Wang¹, Scott J Macgregor¹, Jane M Lehr²
¹University of Strathclyde, Electronic and Electrical Eng,
Glasgow, United Kingdom, ²Sandia National Laboratories
Albuquerque, NM, USA
- 16:15 1107**
**PREVENTING BREAKDOWN BY DIRECT
OPTIMIZATION APPROACH**
Zoran Andjelic¹, Salih Sadovic², Jean-Claude Mauroux³
¹ABB Corporate Research Baden, Switzerland, ²Sadovic
Consulting Paris, France, ³ABB Corporate Research
Zuerich, Switzerland
- 17:15 1108**
**A SIMULATION OF BREAKDOWN PARAMETERS
OF HIGH POWER MICROWAVE INDUCED PLASMA
IN ATMOSPHERIC GASES**
Patrick Ford, John Krile, Hermann Krompholz, Andreas
Neuber
*Texas Tech University, Center for Pulsed Power and Power
Electronics, Lubbock, TX, USA*

**Oral Session 12: Power Conditioning and Pulse Shaping,
Energy Storage Devices and
Components**

Wednesday, June 6, 2012 3:30 – 5:30 PM (Sapphire OP)

Session Chair: Shu Xiao, Old Dominion University

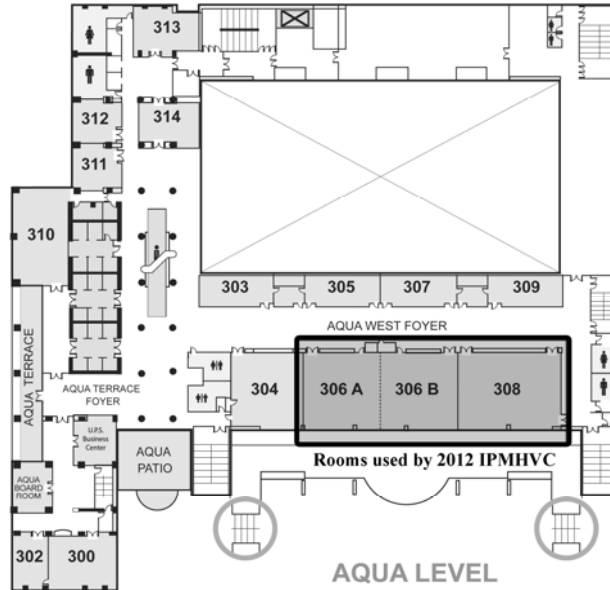
- 15:30 1201**
HIGH TEMPERATURE CAPACITOR PERFORMANCE IN A HIGH POWER, HIGH FREQUENCY CONVERTER
Kevin Bray¹, Hiroyuki Kosai¹, Daniel Schweickart², Biswajit Ray³
¹UES, Inc Dayton, OH, USA, ²Air Force Research Laboratory, RZPE, Dayton, OH, USA, ³Bloomsburg University of Pennsylvania Bloomsburg, PA, USA
- 15:45 1202**
GLASS DIELECTRICS FOR POWER CAPACITORS
Mohan Manoharan¹, Mike Lanagan¹, Douglas Kushner², Chen Zou², Shihai Zhang², Takashi Murata³
¹The Pennsylvania State University, Materials Research Institute, University Park, PA, USA, ²Strategic Polymer Sciences, Inc., Capacitor Division, State College, PA, USA, ³NEG, Glass Division, Shiga, Japan
- 16:00 1203**
ELECTRICAL BREAKDOWN IN CAPACITOR DIELECTRIC FILMS: SCALING LAWS AND THE ROLE OF SELF-HEALING
M. A. Schneider, J. R. MacDonald, M. C. Schalnaf, J. B. Ennis
General Atomics-Electronic Systems, Inc. San Diego, CA, USA
- 16:15 1204**
PULSED CURRENT LIMITATIONS OF HIGH POWER ELECTROCHEMICAL ENERGY STORAGE DEVICES
David Wetz, Biju Shrestha, Peter Novak
University of Texas at Arlington, Electrical Engineering Department, Arlington, TX, USA
- 16:30 1205**
STATUS UPDATE OF THE POWER CONDITIONING SYSTEM IN THE NATIONAL IGNITION FACILITY
Bruno Le Galloudec¹, Phil Arnold¹, Glen James¹, Dave Pendleton¹, Dave Petersen¹, Geoff Arellano-Womack², Javier Cano³, Allen Harkey², Norris Lao², Manuel Magat¹, Michael McIntosh², Quang Ngo², Seth Robison², David Schwedler², Mark Lopez²
¹Lawrence Livermore National Laboratory, Engineering/LSEO, Livermore, CA, USA, ²AKIMA Infrastructure Services LLC Livermore, CA, USA, ³NSTEC Livermore, CA, USA

- 16:45 1206**
**DESIGN AND CONSTRUCTION OF A 250 KV, 100 HZ
REPETITIVE VIRCATOR TEST STAND**
Kelton Clements, Randy Curry, Robert Druce
*University of Missouri, Center for Physical and Power
Electronics, Columbia, MO, USA*
- 17:00 1207**
**EXPERIMENTATION AND SIMULATION OF HIGH
CURRENT DENSITY SURFACE COATED ELECTRO-
EXPLOSIVE FUSES**
*Jacob Stephens, Andreas Neuber, James Dickens, Magne
Kristiansen*
*Texas Tech University, Center for Pulsed Power and Power
Electronics, Lubbock , TX, USA*
- 17:15 1208**
**ANALYSIS ON STRAY PARAMETERS IN A SOLID-
STATE MARX PULSED POWER MODULATOR**
Jian Qiu, Kefu Liu, Liuxia Li
Fudan University, Electric Light Sources, Shanghai, China

Notes

Locations of Conference Activities

Aqua Level - 3rd Floor, Rooms 306/308 Poster Sessions and Short Courses



Sapphire Level - 4th Floor Plenary and Orals, Exhibits, Receptions & Banquet

