

Tuesday, May 27

11:00 am – 5:00 pm
2:00 pm – 8:00 pm
6:00 pm – 8:00 pm
7:30 pm – 11:00 pm

Exhibitor Setup
Registration
Welcome Reception
Night Tour of Vegas Strip and Fremont Street

Wednesday, May 28

7:30 am – 8:30 am
8:00 am – 5:30 pm
8:00 am – 5:00 pm
8:30 am – 10:00 am

Continental Breakfast
Conference Registration and Office Hours
Exhibits Open
Plenary Session 1
Navy Plans for Electric Weapons
Capt. David Keil
NavSea

10:00 am – 10:30 am

Coffee Break

10:30 am – 12:30 pm

Oral Session 1 - Solid State Switches
Scott Kovaleski, University of Missouri – Session Chair
South Seas G

10:30 am – 10:45 am
101

EVALUATION OF LIGHT ACTIVATED THYRISTORS FOR PULSED POWER APPLICATIONS
L. K. Tully, E. S. Fulkerson, D. A. Goerz, R. D. Speer
Lawrence Livermore National Laboratory, Livermore, CA, United States

10:45 am – 11:00 am
102

COMPARATIVE STUDY OF COMPENSATED WIDE BAND GAP PHOTO CONDUCTIVE SWITCH MATERIALS FOR EXTRINSIC MODE OPERATIONS
S. Gyawali, C. Fessler, W. Nunnally, N. Islam
Electrical & Computer Engineering, University of Missouri, Columbia, MO, United States

11:00 am – 11:15 am
103

PHOTOCONDUCTIVE SEMICONDUCTOR SWITCH FOR MICROWAVE APPLICATIONS
Robert O'Connell, Armin Karabegovic, William Nunnally
Electrical and Computer Engineering, University of Missouri, Columbia, MO, United States

11:15 am – 11:30 am
104

LONG LIFETIME OPTICALLY TRIGGERED SOLID STATE MARX
Howard Sanders, Steven Glidden
Applied Pulsed Power, Inc., Freeville, NY, United States

11:30 am – 11:45 am
105

COMPACT SILICON CARBIDE SWITCH FOR HIGH VOLTAGE OPERATION
C. James, J. Dickens, C. Hettler
Dept. of Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States

11:45 am – 12:00 noon 106	<p>INDUCTIVE SWITCHING WITH A 1-KA (SATURATION) NORMALLY ON SiC JFET SWITCH MODULE</p> <p>Michael Mazzola, James Gafford, G. Marshall Molen, Christopher Parker, Guoyun Tian <i>Center for Advanced Vehicular Systems, Mississippi State University, Mississippi State, MS, United States</i></p>
12:00 noon – 12:15 pm 107	<p>HIGH-CURRENT COMPACT FCG SEED SOURCE IMPLEMENTING SOLID STATE SWITCHING</p> <p>Mohamed Elsayed, Thomas Holt, Andrew Young, Andreas Neuber, James Dickens, M. Kristiansen <i>Electrical Engineering, Center for Pulsed Power and Power Electronics, Lubbock, TX, United States</i></p>
12:15 pm – 12:30 pm 108	<p>SOLUTIONS WITH SOLID STATE SWITCHES FOR MODULATORS</p> <p>Adriaan Welleman, Reto Leutwyler <i>ABB Switzerland Ltd, Lenzburg, Switzerland</i></p>
10:30 am – 12:30 pm	<p style="text-align: center;">Oral Session 2 - Dielectric Breakdown Klaus Frank, Texas Tech University, Session Chair South Seas H</p>
10:30 am – 10:45 am 201	<p>UV INDUCED INSULATOR FLASHOVER</p> <p>J.B. Javedani, T.L. Houck, B.T. Kelly, D.A. Lahowe, M.D. Shirk, D.A. Goerz <i>NSED, Lawrence Livermore National Lab, Livermore, CA, United States</i></p>
10:45 am – 11:00 am 202	<p>ANALYTICAL PREDICTION OF HIGH PRESSURE SF6 GAS BREAKDOWN STRENGTH IN A SPARK GAP SWITCH</p> <p>Sang Nam¹, Hoon Heo¹, Sung Park¹, Jin Shin², Joon So², Won Jang² <i>¹Pohang Accelerator Laboratory/POSTECH, Pohang, South Korea/²ADD, Daejeon, South Korea</i></p>
11:00 am – 11:15 am 203	<p>BREAKDOWN INITIATION FIELDS FOR SURFACE FLASHOVER OF DIELECTRIC MATERIALS IMMERSSED IN TRANSFORMER OIL</p> <p>Mark Wilson, Martin Given, Scott MacGregor, Igor Timoshkin, Joseph Beveridge <i>Institute for Energy and Environment, University of Strathclyde, Glasgow, United Kingdom</i> Ken Thomas², Mark Sinclair², Jane Lehr³ 2) HD/Pulsed Power, Building F160.1/Level 2 South, AWE Aldermaston, Reading, RG7 4PR, UK 3) Sandia National Laboratories, P.O.Box 5800, Albuquerque, NM 87185, USA</p>
11:15 am – 11:30 am 204	<p>HIGH VOLTAGE BREAKDOWN OF IRRADIATED TRANSFORMER OIL</p> <p>Sergey Korenev, Roland Johnson <i>Muons, Inc., Batavia, IL, United States</i></p>
11:30 am – 11:45 am 205	<p>SCALING AND IMPROVEMENT OF COMPACT EXPLOSIVELY-DRIVEN FERROELECTRIC GENERATORS</p> <p>David Bolyard, Andreas Neuber, John Krile, John Walter, James Dickens, Magne Kristiansen <i>Center for Pulsed Power and Power Electronics, Department of Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States</i></p>
11:45 am – 12:00 noon 206	<p>HIGH SPECIFIC POWER CAPACITORS</p> <p>Joel Ennis, Fred MacDougall, Xiao Hui Yang, Andy Bushnell, Robert Cooper, John Gilbert <i>Energy Products, General Atomics Electronic Systems, Inc., San Diego, CA, United States</i></p>
12:00 noon – 12:15 pm 207	<p>NANO-ENABLED METAL OXIDE VARISTORS FOR SURGE PROTECTION</p> <p>Daniel Tan, Karim Younsi, Yingneng Zhou, Yang Cao, Patricia Irwin <i>Electronics and Energy Conversion, GE Global Research, Niskayuna, NY, United States</i></p>
12:15 noon – 12:30 pm 208	<p>RANDOM BEHAVIOR OF METALLIC PARTICLES IN VARIOUS DESIGNS OF SINGLE PHASE GAS INSULATED BUS DUCT USING MONTE CARLO TECHNIQUE</p> <p>Jinka Amarnath <i>EEE, J.N.T.University, Hyderabad, India</i></p>

12:30 pm – 1:30 pm

Lunch

1:30 pm – 3:30 pm

Poster Session 1
**High Voltage Workshop, Dielectric Breakdown, Biological/Medical
and Environmental Applications**
Carol Liu, American Electric Power, Session Chair
South Seas E

High Voltage Workshop

1P1

INVESTIGATION OF MINERAL OIL MIXTURES FOR POWER TRANSFORMERS
Kiran Kumar Munji¹, Jayalakshmi chandle¹, Baburao Keshawatkar², venkatasami athikkan²,
Sushil chaudhari²
¹Electrical, Veermata jijabai Technological Institute, Mumbai, India²Global R&D Centre, CMDRC,
Crompton Greaves Ltd, Mumbai, India

1P2

**ELECTRICAL CLEARANCE IN AIR FOR 25 kV, 50 Hz, ac, OVERHEAD ELECTRIC
TRACTION**
RAVINDRA ARORA
EE, I.I.T. KANPUR, KANPUR, India

1P3

**FUNDAMENTAL CHARACTERISTICS OF ICE BREAKING USING PULSED
POWER**
Satoshi Ihara¹, Kouji Jinnai¹, Chobei Yamabe¹, Shuki Ushio²
¹Electrical and Electronic Engineering, Saga University, Saga, Japan²National Institute of Polar
Research, Tokyo, Japan

1P4

CONTROL SYSTEM FOR INDUSTRIAL COMPUTER TOMOGRAPHY
Hu Hepin, Gan Kongyin, Da Lijun, Li Min
Lab of FEL Research, Institute of Applied Electronics. China Academy of Engineering Physics,
Mianyang, China

1P5

**DC AND PULSE MODE POWER SUPPLIES FOR HIGH POWER VACUUM
ELECTRON DEVICES**
Evgeny Kopelovich¹, Alexander Novikov¹, Maksim Troitsky¹, Feliks Flat¹
¹Russian Academy of Sciences, Institute of Applied Physics, Nizhny Novgorod, Russia

1P6

**COMPACT HV POWER SUPPLIES FOR NATIONAL AND HOMELAND SECURITY
APPLICATIONS**
Arlyn Antolak¹, Ka-Ngo Leung²
¹Sandia National Laboratories, Livermore, CA, United States²Lawrence Berkeley National
Laboratory, Berkeley, CA, United States

1P7

**REDESIGN OF A HV BLUMLEIN PULSER FOR PULSE UPGRADE IN THE
MICROSECOND RANGE**
Jose Rossi*, Mario Ueda, Rogerio Oliveira
Associated Plasma Laboratory, INPE, S.J. Campos, Brazil

1P8

**2D MODELLING OF SKIN AND PROXIMITY EFFECTS IN TESLA
TRANSFORMERS**
Partha Sarkar¹, Bucur Novac¹, Ivor Smith¹, Gerry Louverdis²
¹Electronic and Electrical Engineering, Loughborough University, Loughborough, United
Kingdom²Electronics, Dstl, Fort Halsted, United Kingdom

1P9

PARTIAL DISCHARGE PATTERN RECOGNITION USING FUZZY-NEURAL

NETWORKS (FNNS) ALGORITHM

Jeong-Tae Kim¹, Won Choi¹, Sung-Kwun Oh², Keon-Joon Park², Stanislaw Grzybowski³
¹Electrical Engineering, Daejin University, Pocheon-Shi, Korea²Electrical Engineering, The University of Suwon, Suwon-Shi, Korea³Electrical & Computer Engineering, Mississippi State University, Starkville, MS, United States

1P10

LASER ANNEALING EFFECTS ON DC AND AC SURFACE FLASHOVER OF PMMA AND POLYSTYRENE

Jennifer Zirnheld, Kevin Burke, Shola Olabisi, Adam Halstead, Adam Kraus, Barnard Onyenucheya
Electrical Engineering, University at Buffalo, The State University of New York, Buffalo, NY, United States

1P11

BREAKDOWN CHARACTERISTICS OF NITROGEN UNDER UNIPOLAR APPLIED VOLTAGES FOR NON-UNIFORM FIELD CONFIGURATION

Kalyan Koppisetty¹, Hulya Kirkici¹, Daniel Schweickart²
¹ECE Dept., Auburn University, Auburn, AL, United States²WPAFB, Air Force Research Laboratory, Dayton, OH, United States

1P12

EXPERIMENTAL RESEARCH ON THE VOLTAGE DISTRIBUTION OF TESLA TRANSFORMER'S TAPER WINDINGS

LI Ming-jia^{1,2}, KANG Qiang¹, CHANG An-bi¹, SU You-bin¹
¹Institute of Applied Electronics, CAEP, Mianyang, China² Graduate School of China Academy of Engineering Physics, Beijing, China

1P13

HIGH BREAKDOWN STRENGTH, HIGH DIELECTRIC CONSTANT COMPOSITES FOR HIGH FREQUENCY APPLICATIONS

Joe Davies, Mike Dunleavy, Hazel Davies, Sajad Haq, Martyn Hucker, Caroline Trigg
Materials Sciences, BAE SYSTEMS, Bristol, United Kingdom

1P14

CAPACITOR EVALUATION FOR COMPACT HV PULSE GENERATION

E. J. Matthews, A. A. Neuber, M. Kristiansen
Center for Pulsed Power and Power Electronics, Departments of Electrical and Computer Engineering and Physics, Texas Tech University, Lubbock, TX, United States

1P15

BREAKDOWN VOLTAGE OF THERMOPLASTICS WITH CLAY NANOMETER-SIZED FILLER

Stephen Brandstetter¹, John Horwath², Daniel Schweickart², Richard Vaia², Lawrence Drummy²
¹UES, Inc., Dayton, OH, United States²Air Force Research Laboratory, WPAFB, OH, United States

1P16

EXPERIMENTAL STUDY OF ELECTRICAL BREAKDOWN VOLTAGE OF A GLASS INSULATOR CHAIN WITH DIFFERENT NUMBERS OF BROKEN UNITS

L.R.P. Leite¹, A.H. Shinohara¹, E. G. Costa², G. J. V. Xavier³
¹Federal University of Pernambuco, Recife, Brazil²Federal University of Campina Grande, Recife, Brazil³Companhia Hidrelétrica do São Francisco, Recife, Brazil

1P17

MODELING BREAKDOWN PROCESSES IN RF CAVITIES USING PARTICLE-IN-CELL (PIC) CODES

SUDHAKAR MAHALINGAM, SETH VEITZER, PETER STOLTZ
TECH-X CORPORATION, Boulder, CO, United States

1P18

LASER REMPI TRIGGERING OF AIR SPARK GAP WITH NANOSECOND JITTER

Jared A. Miles, Steven F. Adams, Charles A. DeJoseph Jr.
Propulsion Directorate, Air Force Research Lab, Wright Patterson AFB, OH, United States

1P19

SPATIAL DISTRIBUTION OF ELECTRON STIMULATED ELECTRON DESORPTION FROM A METAL SURFACE AT AMBIENT TEMPERATURES

Sandeep Kumar Sangaraju, Shaoru Garner, Nathan Lehman, Robert A. Schill, Jr.
Department of Electrical and Computer Engineering, University of Nevada Las Vegas, Las Vegas, NV, United States

1P20

PERFORMANCE OF NON-LINEAR STRESS-GRADING SYSTEMS AT NON-SINUSOIDAL VOLTAGES

Hassan El-Kishky, Gopala-Krishna Vellsnki

Department of Electrical Engineering, The University of Texas at Tyler, Tyler, TX, United States

1P21 **PARTIAL ELECTRICITY PARAMETERS OF DIELECTRIC BARRIER DISCHARGE (DBD) AT ATMOSPHERIC PRESSURE**

Xiaoliang Tang¹, Gao Qiu², Xinpeng Wang⁴, Xianping Feng⁴

¹Plasma and Surface Research Center, College of Science, Donghua University, Shanghai, China²National Engineering Research Center for Dyeing and Finishing of Textiles, Donghua University, Shanghai, China³College of Material Science and Engineering, Donghua University, Shanghai, China⁴Department of Physics, University of Puerto Rico, San Juan, PR, Puerto Rico

1P22 **ON THE EVALUATING THE THERMAL LIFETIME OF THE ELECTROINSULATING TRANSFORMER OIL**

Helerea Elena¹, Munteanu Adrian²

¹Electrical Engineering, Transilvania University of Brasov, Brasov, Rumania²Electrical Engineering, Transilvania University of Brasov, Brasov, Rumania

1P23 **A SIMULATION MODEL FOR THE GROWTH OF ELECTRICAL TREE IN SOLID INSULATION**

Abd-Elatief Elzein¹, Mahmoud El-Bahy², Mohammed Talaat³

¹Electrical and Machines, Zagazig University- Faculty of Engineering, zagazig, Egypt²Electrical, Sinai University- Faculty of Engineering, El-Arish, Egypt³Electrical and Machines, Zagazig University- Faculty of Engineering, zagazig, Egypt

Dielectric Breakdown

1P24 **EFFECT OF VARIOUS DESIGN PARAMETERS OF GAS INSULATED BUS DUCT IN THE PERFORMANCE OF GAS INSULATED SUB-STATIONS**

Jinka Amarnath

EEE, J.N.T.University, Hyderabad, India

1P25 **FINITE DIFFERENCE TIME DOMAIN ANALYSIS OF PARTIAL DISCHARGE SIGNALS IN GIS**

Jinka Amarnath¹, SRaghunath Sagar², SVL Narasimham¹

¹Electrical, JNTU, Hyderabad, India²Electrical, Sir CRR College of Engineering, Eluru, India

1P26 **ELECTRON EMISSION NEAR A TRIPLE POINT**

N. M. Jordan, D. M. French, Y. Y. Lau, R. M. Gilgenbach, P. Pengvanich

Nuclear Engineering and Radiological Sciences, University of Michigan, Ann Arbor, MI, United States

1P27 **OPTICAL MEASUREMENTS OF THE ELECTRIC FIELD OF PULSED STREAMER DISCHARGE IN WATER**

Yasushi Minamitani¹, Shigehiro Nakamura¹, Taiki Handa¹, Sunao Katsuki², Takao Namihira², Hidenori Akiyama²

¹Graduate School of Science and Engineering, Yamagata University, Yonezawa, Japan²Graduate School of Science and Technology, Kumamoto University, Kumamoto, Japan

1P28 **VOLTAGE BREAKDOWN CHARACTERIZATION OF OIL DIELECTRICS FOR HIGH-POWER SWITCHING APPLICATIONS**

Christopher Yeckel¹, Randy Curry¹, Peter Norgard¹, L. Gschwender², G. Fultz³

¹Center for Physical and Power Electronics, University of Missouri, Columbia, MO, United States²Wright Patterson Airforce Base, , OH, United States³University of Dayton Research Institute, Dayton, OH, United States

1P29 **FREQUENCY EFFECTS ON MICRO-HOLLOW CATHODE DISCHARGES**

Mark Lipham¹, Hulya Kirkici², Kalyan Koppisetty³

¹Electrical Engineering, Auburn University, Auburn, AL, United States²Electrical Engineering, Auburn University, Auburn, AL, United States³Electrical Engineering, Auburn University, Auburn, AL, United States

Biological/Medical and Environmental Applications

CABLES

Ahmed A. Hossam- Eldin , Samer M. S. Elhadary
 Department of Electrical Engineering, Alexandria University, Alexandria, Egypt

3:00 pm – 3:30 pm

Coffee Break

3:30 pm – 5:30 pm

**Oral Session 3 - Biological/Medical
 and Environmental Applications**

**Martin Gundersen, University of Southern California, Session Chair
 South Seas G**

3:30 pm – 3:45 pm
301

**SUBNANOSECOND ELECTRICAL PULSES FOR MEDICAL THERAPIES AND
 MEDICAL IMAGING**

Karl H. Schoenbach, Shu Xiao, James T. Camp
 Frank Reidy Research Center for Bioelectrics, Old Dominion University, Norfolk, VA, United States

3:45 pm – 4:00 pm
302

**NANOSECOND PULSE GENERATOR WITH VARIABLE PULSE DURATION FOR
 THE STUDY OF PULSE INDUCED BIOLOGICAL EFFECTS**

Juergen Kolb¹, Andrea DeAngelis², Shaka Scarlett¹, Christopher Osgood¹, Luigi Zeni³, Karl Schoenbach¹
¹Frank Reidy Research Center for Bioelectrics, Old Dominion University, Norfolk, VA, United States²Dipartimento di Informatica, Matematica, Elettronica e Trasporti (DIMET), Università Mediterranea di Reggio Calabria, Reggio Calabria, Italy³Department of Information Engineering, Second University of Naples, Aversa, Italy

4:00 pm – 4:15 pm
303

NANOSECOND PULSE GENERATOR WITH SCALABLE PULSE AMPLITUDE

Jason Sanders, Andras Kuthi, Martin Gundersen
 Electrical Engineering, University of Southern California, Los Angeles, CA, United States

4:15 pm – 4:30 pm
304

PULSE POWER FOR WOUND HEALING

Shu Xiao, Tsuyoshi Kiyari, Karl H. Schoenbach
 Frank Reidy Research Center for Bioelectrics, Old Dominion University, Norfolk, VA, United States

4:30 pm – 4:45 pm
305

PEF SYSTEMS FOR FOOD AND WASTE STREAMS

Michael A. Kempkes, Rhonda Liang, James E. Petry, Marcel P.J. Gaudreau
 Diversified Technologies, Inc., Bedford, MA, United States

4:45 pm – 5:00 pm
306

**LOW ENERGY NANOSECOND PULSED PLASMA STERILIZATION FOR
 ENDODONTIC APPLICATIONS**

Chunqi Jiang¹, P. Thomas Vernier¹, Meng-Tse Chen¹, Yu-Hsuan Wu¹, Leslie L. Wang², Martin A. Gundersen¹
¹Department of EE-Electrophysics, University of Southern California, Los Angeles, CA, United States²School of Dentistry, University of Southern California, Los Angeles, CA, United States

5:00 pm – 5:15 pm
307

**WATER TREATMENT BY ATMOSPHERIC DISCHARGE PRODUCED WITH
 NANOSECOND PULSED POWER**

Taiki Yano¹, Ichiro Uchiyama¹, Fumiaki Fukawa¹, Kenji Teranishi², Naoyuki Shimomura²
¹Dept. of Electrical and Electronic Engineering, The University of Tokushima, Tokushima, Japan²Institute of Technology and Science, The University of Tokushima, Tokushima, Japan

5:15 pm – 5:30 pm
308

**DBD- TYPE OZONE GENERATOR USING PIEZOELECTRIC TRANSFORMERS:
 EFFECT OF BARRIER ELECTRODE MATERIAL ON OZONE GENERATION**

Kenji Teranishi¹, Naoyuki Shimomura¹, Susumu Suzuki², Haruo Itoh²
¹Graduate School of Advanced Technology and Science, The University of Tokushima, Tokushima, Japan²Graduate School of Engineering, Chiba Institute of Technology, Narashino, Japan

3:30 pm – 5:30 pm

Oral Session 4 - High Current Systems

and Electromagnetic Launchers
Frank Hegeler, Naval Research Lab/Commonwealth Tech.,
Session Chair
South Seas H

3:30 pm – 3:45 pm
401

DEVELOPMENT OF A PLASMA DRIVE RAILGUN TO REACH 7 KM/S
David Wetz, Francesco Stefani, Jerald Parker, Ian McNab
Institute for Advanced Technology, The University of Texas at Austin, Austin, TX, United States

3:45 pm – 4:00 pm
402

EFFECT OF FUSE RESISTANCE ON EML CAPACITOR BANK SOLID-STATE SWITCHING*
Brett Huhman, Jesse Neri
Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

4:00 pm – 4:30 pm
403,4

OVERVIEW AND STATUS OF THE UPGRADED Z PULSED POWER DRIVER
Mark Savage, Keith LeChien, William Stygar, John Maenchen, Dillon McDaniel, Kenneth Struve
Sandia National Laboratories, Albuquerque, NM, United States

4:30 pm – 4:45 pm
405

**CIRCUIT-CODE MODELING OF THE REFURBISHED Z ACCELERATOR:
COMPARISON OF MEASUREMENTS WITH PREDICTIONS**
Kenneth Struve¹, Lawrence Bennett¹, Timothy Chavez², Henry Harjes¹, David Smith¹, Tim Wagoner³
¹*Pulsed Power Sciences Center, Sandia National Laboratories, Albuquerque, NM, United States*²*EG&G, Albuquerque, NM, United States*³*Ktech Corporation, Albuquerque, NM, United States*

4:45 pm – 5:00 pm
406

LOAD LINE EVALUATION OF A 1-MV LINEAR TRANSFORMER DRIVER (LTD)
Joshua Leckbee¹, Steve Cordova¹, Bryan Oliver¹, David Johnson², Bill Bui³
¹*Advanced Radiographic Technologies, Sandia National Laboratories, Albuquerque, NM, United States*²*L-3 Communications - Pulsed Sciences, San Leandro, CA, United States*³*K-Tech Corporation, Albuquerque, NM, United States*

5:00 pm – 5:15 pm
407

MODULAR HIGH CURRENT TEST FACILITY AT LLNL
L. K. Tully, D. A. Goerz, R. D. Speer
Lawrence Livermore National Laboratory, Livermore, CA, United States

5:15 pm – 5:30 pm
408

X-RAY EMISSION FROM X PINCH
Xiaobing Zou, Rui Liu, Xinxin Wang, Luya He
Department of Electrical Engineering, Tsinghua University, Beijing, China

8:00 pm – 10:00 pm

Night at the Lagoon

Thursday, May 29

7:30 am – 8:30 am
8:00 am – 5:30 pm
8:00 am – 5:00 pm
8:30 am – 10:00 am

Continental Breakfast
Conference Registration and Office Hours
Exhibits Open
Plenary Session 2
Navy and DoD Electric and Directed Energy Weapons Systems Science and Technology Program Overviews
Peter Morrison
Office of Naval Research

10:00 am – 10:30 am

Coffee Break

10:30 am – 12:30 pm

Oral Session 5 - Solid State Systems

Bob O'Connell, University of Missouri, Session Chair

South Seas G

10:30 am – 10:45 am

501

DEVELOPMENT OF A 150-KW, BATTERY POWERED, RAPID CAPACITOR CHARGER FOR A SMALL RAILGUN IN BURST MODE OPERATION AT 3 RPS

Raymond Allen¹, Craig Boyer², Jesse Neri¹, Mike Veracka³

¹Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States²Titan Group, L3 Communications, Reston, VA, United States³Tactical Electronic Warfare Division, Naval Research Laboratory, Washington, DC, United States

10:45 am – 11:00 am

502

IMPLEMENTATION OF SOLID-STATE PLASMA PULSE GENERATORS AND THE HIGH CURRENT, HIGH VOLTAGE SOLID-STATE MODULATORS FOR THE NIF PLASMA ELECTRODE POCKELS CELL

F. Barbosa, P. Arnold, B. Mchale, E. Cook, B. Hickman, G. Akana

Lawrence Livermore National Laboratory, Livermore, CA, United States

11:00 am – 11:15 am

503

A RESONANTLY DRIVEN PIEZOELECTRIC TRANSFORMER FOR HIGH VOLTAGE GENERATION

Andrew Benwell, Scott Kovaleski, Mark Kemp

Electrical and Computer Engineering, University of Missouri, Columbia, MO, United States

11:15 am – 11:30 am

504

PULSE VOLTAGE DROOP COMPENSATION FOR SOLID STATE MARX MODULATOR

Richard L. Cassel

Stangenes Industries, Inc., Palo Alto, CA, United States

11:30 am – 11:45 am

505

SOLID-STATE MODULATORS FOR APPLICATIONS TO INDUCTION SYNCHROTRON

Weihua Jiang¹, Kazushi Hisayama¹, Kazumasa Narita¹, Ken Takayama², Masayoshi Wake^{2,3}, Naohiro Shimizu³

¹Department of Electrical Engineering, Nagaoka University of Technology, Nagaoka, Japan²High-Energy Accelerator Research Organization, Tsukuba, Japan³Corporate Technical Center, NGK Insulators, Ltd., Nagoya, Japan

11:45 am – 12:00 pm

506

DEVELOPMENT STATUS OF THE ILC MARX MODULATOR*

M. Nguyen, T. Beukers, C. Burkhart, R. Cassel, R. Larsen, T. Tang

Stanford Linear Accelerator Center, Menlo Park, CA, United States

12:00 pm – 12:15 pm

507

MARX BANK TECHNOLOGY FOR ACCELERATORS AND COLLIDERS

Jeffrey A. Casey, Michael A. Kempkes, Ian S. Roth, Floyd O. Arntz, Marcel P.J. Gaudreau

Diversified Technologies, Inc., Bedford, MA, United States

12:15 pm – 12:30 pm

508

HYBRID MOSFET/DRIVER FOR ULTRA-FAST SWITCHING

Tao Tang, Craig Burkhart

Stanford Linear Accelerator Center, Menlo Park, CA, United States

10:30 am – 12:30 pm

Oral Session 6 - High Power

Microwaves and Radiating Structures

Andreas Neuber, Texas Tech University, Session Chair

South Seas H

10:30 am – 10:45 am

601

NONLINEAR TRANSMISSION LINES FOR HIGH POWER MICROWAVE APPLICATIONS – A SURVEY#

John A. Gaudet¹, Edl Schamiloglu¹, Jose O. Rossi¹, C. Jerald Buchenauer¹, Charles Frost²

¹Electrical & Computer Engineering Dept., University of New Mexico, Albuquerque, NM, United States²Pulse Power Physics, Albuquerque, NM, United States

10:45 am – 11:00 am
602

SUBGIGAWATT Ka-BAND BWO WITH A PERMANENT-MAGNET-BASED e-BEAM FOCUSING SYSTEM: EXPERIMENTS, SIMULATIONS, AND PROSPECTS

Michael Yalandin¹, Valery Shpak¹, Sergei Shunailov¹, Sergei Zhakov², Vladislav Rostov³,
Gennady Mesyats⁴

¹Institute of Electrophysics UB RAS, Ekaterinburg, Russia²Institute of Metal Physics UB RAS, Ekaterinburg, Russia³High Current Electronics Institute SB RAS, Tomsk, Russia⁴Lebedev Physical Institute RAS, Moscow, Russia

11:00 am – 11:15 am
603

SHORT RISE TIME HIGH POWER MICROWAVE INDUCED SURFACE FLASHOVER AT ATMOSPHERIC PRESSURES*

Jonathan Foster, Greg Edmiston, John Krile, Andreas Neuber, Herman Krompholz
Center for Pulsed Power and Power Electronics, Department of Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States

11:15 am – 11:30 am
604

REDUCING MODE COMPETITION IN A COAXIAL VIRCATOR

Edmundo Zepeda, David Belt, John Mankowski, Magne Kristiansen
Electrical and Computer Engineering, P3E, Lubbock, TX, United States

11:30 am – 11:45 am
605

A COMPACT, SELF-CONTAINED HIGH POWER MICROWAVE SOURCE BASED ON A REFLEX-TRIODE VIRCATOR AND EXPLOSIVELY DRIVEN PULSED POWER

Andrew Young, Thomas Holt, Mohamed Elsayed, John Walter, James Dickens, Andreas Neuber
Texas Tech University Electrical and Computer Engineering, Center for Pulsed Power and Power Electronics, Lubbock, TX, United States

11:45 am – 12:00 pm
606

NUMERICAL INVESTIGATION OF SHAPED AND TRANSPARENT CATHODES IN THE RELATIVISTIC MICHIGAN MAGNETRON

Timothy Fleming, Peter Mardahl
Directed Energy, Air Force Research Lab, Albuquerque, NM, United States

12:00 pm – 12:15 pm
607

ANALYSIS OF MESOBAND SINGLE ELEMENT PULSED RING-DOWN ANTENNAS FOR IMPLEMENTATION IN PHASED ARRAY SYSTEMS

David Belt, John Mankowski, John Walter, James Dickens, Magne Kristiansen
Dept. of Electrical and Computer Engineering and Physics, Center for Pulsed Power and Power Electronics, Lubbock, TX, United States

12:15 pm – 12:30 pm
608

IMPULSE LOADING OF SINUOUS ANTENNAS BY FERROELECTRIC GENERATORS

Allen H. Stults
US Army, Aviation and Missile Research, Development, and Engineering Center, Redstone Arsenal, AL, United States

12:30 pm – 1:30 pm

Lunch

1:30 pm – 3:30 pm

Poster Session 2

Solid State Switches, Solid State Systems, High Power Microwaves, High Current Systems, Electromagnetic Launchers, Applications and Components

**Ryan Umstatted, United States Air Force, Session Chair
South Seas E**

Solid State Switches

2P1

MAGNETORESISTANCE IN SEMICONDUCTOR-METAL HYBRIDS FOR POWER APPLICATIONS

Clay Nunnally, Thomas Engel
Electrical and Computer Engineering, University of Missouri, Columbia, MO, United States

2P2 **10kV/100ns PULSED POWER SWITCH BASE ON SiC-JFET SUPER CASCODES**
Juergen Biela, Daniel Aggeler, Dominik Bortis, Johann Walter Kolar
Power Electronic Systems Laboratory, ETH Zurich, Zurich, Switzerland

2P3 **CHARACTERIZATION OF POWER IGBTs TO CREATE A SPICE MODEL FOR PULSED POWER APPLICATIONS**
James VanGordon¹, Scott Kovaleski¹, Gregory Dale²
¹*Electrical and Computer Engineering, University of Missouri, Columbia, MO, United States*/²*High Power Electrodynamics Group, Los Alamos National Laboratory, Los Alamos, NM, United States*

2P4 **HIGH CURRENT, HIGH di/dt, SOLID STATE SWITCH RESISTANCE MODEL**
Howard Sanders, Steven Glidden
Applied Pulsed Power, Inc., Freeville, NY, United States

2P5 **2500HZ 16KV HIGH CURRENT THYRISTOR BASED SOLID STATE SWITCH**
Howard Sanders, Steven Glidden
Applied Pulsed Power, Inc., Freeville, NY, United States

2P6 **1200A HIGH SPEED INJECTION AND EXTRACTION KICKER MAGNET DRIVERS FOR EMMA**
Howard Sanders, Steven Glidden
Applied Pulsed Power, Inc., Freeville, NY, United States

2P7 **ACCURATE MEASUREMENT OF ON-STATE LOSSES OF POWER SEMICONDUCTORS**
Alex Pokryvailo, Costel Carp
Spellman High Voltage Corporation, Hauppauge, NY, United States

2P8 **A 100 KILOVOLT PHASE CONTROL THYRISTOR SWITCH STACK**
John Kulpin
Department of Physics, University of Wisconsin, Madison, WI, United States

2P9 **HIGH RELIABILITY SEMICONDUCTOR SWITCHES FOR PEF PROCESSING**
Andy Dunlop
Power Electronics, Dynex Semiconductor, Lincoln, United Kingdom

Solid State Systems

2P10 **GIGAWATT ALL SOLID STATE FID PULSERS WITH NANOSECOND PULSE DURATION**
Vladimir Efanov, Mikhail Efanov
FID GmbH, Burbach, Germany

2P11 **HIGH VOLTAGE AND HIGH PRF PICOSECOND FID PULSE GENERATORS**
Vladimir Efanov, Alexander Komashko, Pavel Yarin, Alexander Kriklenko, Nikolai Savastianov
FID GmbH, Burbach, Germany

2P12 **SOLID STATE SWITCHED MODULATOR FOR POWER MAGNETRON**
Claudio Motta
CTMSP, University of Sao Paulo - USP, SAO PAULO, Brazil

2P13 **HIGH VOLTAGE SEMICONDUCTOR PULSE GENERATOR FOR MANUFACTURE OF OXIDE NANOSTRUCTURES WATER DISPERSIONS**
Philip Rutberg¹, Igor Grekhov², Victor Kolikov¹, Sergej Korotkov², Vadim Snetov¹, Aleksey Stogov¹
¹*Institute for Electrophysics and Electric Power Russian Academy of Science, St. Petersburg, Russia*/²*Ioffe Physico-Technical Institute Russian Academy of Science, St. Petersburg, Russia*

2P14 **DEVELOPMENT OF 10 KV, 50 A, 50 KHZ HIGH REPETITIVE PULSED POWER MODULATOR BASED ON IGBT STACKS**
H.J. Ryoo¹, S.R. Jang²
¹*Industry Application Research Laboratory, KERI, Changwon, Korea*/²*Dept of Energy Conversion*

Engineering, University of Science & Technology, Daejeon, Korea

2P15 **GATE DRIVE CIRCUIT FOR PARALLEL CONNECTED IGBT MODULES**
Dominik Bortis, Juergen Biela, Johann Walter Kolar
Power Electronic Systems Laboratory, ETH Zurich, Physikstrasse 3, Zurich, Switzerland

2P16 **A SOLID-STATE MARX GENERATOR WITH INSOLATED RECHARGE**
Kefu Liu, Jian Qiu¹, Yan Luo²
¹Institute of Electrical Light Sources, Fudan University, Shanghai, China²Department of Electrical and Electronics Engineering, Huazhong University of Science and Technology, Wuhan, China

2P17 **EXPERIMENTAL STUDY ON FAST SOLID MODULATOR TECHNIQUE
BASED ON MOSFET**
Xu Yucun¹, Wang Xiangqi²
¹USTC, NSRL, HeFei, China²USTC, NSRL, HeFei, China

2P18 **DESIGN AND CONTROL OF AN ACTIVE RESET CIRCUIT FOR PULSE
TRANSFORMERS**
Dominik Bortis, Juergen Biela, Johann Walter Kolar
Power Electronic Systems Laboratory, ETH Zurich, Physikstrasse 3, Zurich, Switzerland

High Power Microwaves

2P19 **A 600 KV, 150 NS RISE-TIME PULSE TRANSFORMER FOR KLYSTRON PULSE
MODULATOR**
Mitsuo Akemoto¹, Akira Tokuchi²
¹High Energy Accelerator Research Organization(KEK), Tsukuba, Japan²Nichicon Kusatsu Corporation, Kusatsu, Japan

2P20 **AN EXPLOSIVELY DRIVEN FERROELECTRIC GENERATOR DESIGN**
Shad L. Holt¹, David J. Hemmert¹, John W. Walter², James C. Dickens², Larry L. Altgilbers³, Allen H. Stults⁴
¹HEM Technologies, Lubbock, TX, United States²Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States³U.S. Army SMDC, Huntsville, AL, United States⁴U.S. Army AMRDEC, Huntsville, AL, United States

2P21 **SYSTEM CONTROLLER FOR HIGH POWER ELECTROMAGNETIC GENERATOR**
S. C. Kim, S. S. Park, H. Heo, S. W. Kim, Y. U. Shon, S. H. Nam
Accelerator Division, Pohang Accelerator Laboratory(PAL), Pohang, Korea

2P22 **PERFORMANCE OF A MONOCYCLE PULSE FORMER FOR COMPACT HIGH-
POWER UWB SOURCES**
Benoît MARTIN¹, Philippe DELMOTÉ¹, Bernard JECKO²
¹Div. IV/EMW, ISL, Saint Louis, France²OSA, XLIM, Limoges, France

2P23 **SHORT-PULSE ACCELERATORS AT UNM FOR MAGNETRON EXPERIMENTS***
Marvin Roybal, Sarita Prasad, Ken Prestwich, Jerald Buchenauer, Mikhail Fuks, Edl Schamiloglu
Electrical and Computer Engineering Department, The University of New Mexico, Albuquerque, NM, United States

2P24 **HIGHLY EFFECTIVE, REPETITIVE NANOSECOND-RANGE Ka-BAND BWO**
Michael Yalandin¹, Sergei Rukin¹, Valery Shpak¹, Sergei Shunailov¹, Vladislav Rostov², Gennady Mesyats³
¹Institute of Electrophysics UB RAS, Ekaterinburg, Russia²High Current Electronics Institute SB RAS, Tomsk, Russia³Lebedev Physical Institute RAS, Moscow, Russia

2P25 **EXPERIMENTS AND SIMULATIONS OF A COMPACT UWB PULSE GENERATOR
COUPLED TO AN EXPONENTIAL FLARED TEM HORN ANTENNA**
Fredrik Olsson, Mats Jansson, Denny Åberg, Magnus Karlsson, Berndt-Olof Bergman
BAE Systems Bofors AB, Karlskoga, Sweden

High Current Systems

2P26 **SEED BANKS FOR MAGNETIC FLUX COMPRESSION GENERATORS**
E. Stephen Fulkerson

Engineering, Lawrence Livermore National Laboratory, Livermore, CA, United States

2P27

**AG- WIRE EXPLOSION IN WATER – A POTENTIAL SOURCE OF COHERENT
SOFT X-RAY RADIATION**

*Vaclav Prukner, Karel Kolacek, Jiri Schmidt, Oleksandr Frolov, Jaroslav Straus
Pulse Plasma Systems, Institute of Plasma Physics AS CR, v.v.i., Prague, Czech Republic*

2P28

**HIGH RESOLVED SPECTRA OF PULSE HIGH CURRENT CAPILLARY
DISCHARGE PLASMA**

*Jiri Schmidt, Karel Kolacek, Oleksandr Frolov, Vaclav Prukner, Jaroslav Straus
Pulse Plasma Systems Department, Institute of Plasma Physics AS CR, v.v.i., Prague 8, Czech
Republic*

2P29

**DEVELOPMENT OF A PUMPED LC TANK CIRCUIT FOR USE IN AN ADIABATIC
PULSED INDUCTIVE HEATING APPLICATION**

*David Wetz, Dwayne Surls, Dwight Landen, Sikhanda Satapathy, Scott Levinson, Mark Crawford
Institute for Advanced Technology, The University of Texas at Austin, Austin, TX, United States*

Electromagnetic Launchers

2P30

**A 500KJ COMPACT PULSED POWER SUPPLY SYSTEM USED FOR EMG
INVESTIGATION**

*Han Yongxia, Lin Fuchang, Dai Ling, Li Hua, Lia Gang
College of Electrical and Electronic Engineering, Huazhong University of Science and
Technology, Wuhan, China*

2P31

**MODELING AND ANALYSIS OF THE CURRENT DISTRIBUTION BETWEEN THE
BRUSHES OF A MULTIPLE BRUSH PROJECTILE IN A PARALLEL AUGMENTED
RAILGUN**

*Mieke Coffo¹, Johan Gallant¹
¹ABAL, Royal Military Academy, Belgium, Brussels, Belgium²ABAL, Royal Military Academy,
Brussels, Belgium*

2P32

**A 40 STAGE SYNCHRONOUS FREE-RUNNING ARC DISTRIBUTED ENERGY
RAILGUN SIMULATION**

*Ryan Karhi, John Mankowski, Magne Kristiansen
Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States*

Applications and Components

2P33

ELECTRIC DISCHARGE DRILLING OF CONCRETE

*Juergen Biela, Christoph Marxgut, Dominik Bortis, Johann Walter Kolar
Power Electronic Systems Laboratory, ETH Zurich, Zurich, Switzerland*

2P34

**SIMULATION AND MEASUREMENT OF POWER WAVEFORM DISTORTIONS
USING LABVIEW**

*Sarbjeet Kaur Bath¹, Sanjay Kumar Kumra²
¹Department of Electrical Engineering, GZS College of Engineering and Technology,
Bathinda, Punjab, India²Hydro Power Station, Punjab State Electricity Board, Talwara,
Punjab, India*

2P35

**NEW METHOD FOR CALIBRATING A ROGOWSKI COIL OF FAST TIME
RESPONSE**

*Xiaobing Zou, Rui Liu, Xinxin Wang, Jianqiang Yuan
Department of Electrical Engineering, Tsinghua University, Beijing, China*

2P36

**NOVEL EVALUATION METHOD OF INTERNAL TEMPERATURE IN IGBT
USING GATE VOLTAGE PATTERN DIAGNOSIS**

*Bongseong Kim¹, KwangCheol Ko²
¹department of electrical engineering, Hanyang university, Seoul, South Korea²Div. of Electrical
& Biomedical Engineering, Hanyang university, Seoul, South Korea*

2P37

DYNAMIC CONTACT RESISTANCE MEASUREMENT (DCRM) – A DIAGNOSTICS

TOOL FOR CIRCUIT BREAKER A CASE STUDY.

Ganesh Sonar, Lalichan Andrews, Athikkan Venkatasami
R & D, Crompton Greaves Ltd., Mumbai, India

2P38

DEVELOPMENT OF A MEMS COAXIAL CABLE PROCESSING MACHINE

Shota Inoue, Takao Namihira, Satoshi Maruyama
*Graduate School of Science and Technology, Kumamoto University, 2-39-1 Kurokami,
Kumamoto 860-8555, Japan*

2P39

HIGH VOLTAGE SQUARE WAVE GENERATOR FOR MOTOR COIL INSULATION TESTING

Ya Tong Yu¹, Shesha Jayaram²
¹*Electrical and Computer Engineering, University of Waterloo, Waterloo, ON, Canada*²*Electrical and Computer Engineering, University of Waterloo, Waterloo, ON, Canada*

2P40

OPTIMIZATION OF A MAGNETIC FIELD GENERATOR PRODUCING HIGH MAGNETIC FIELDS AND RATE OF CHANGE OF MAGNETIC FIELDS

Jonathan Parson, John Walter, James Dickens
Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

2P41

INNOVATIVE DIAGNOSTIC TECHNIQUES FOR POWER-ELECTRONIC CONTROLLED ELECTRICAL APPARATUS

Gian Carlo Montanari, Andrea Cavallini, Davide Fabiani
Dept. of Electrical Engineering, University of Bologna, Bologna, Italy

2P42

HIGH VOLTAGE NANOSECOND PULSERS FOR PLASMA CHEMISTRY AND GAS DISCHARGE

Vladimir Efanov, Pavel Yarin, Alexander Kriklenko, Vladimir Mankevich
FID GmbH, Burbach, Germany

3:00 pm – 3:30 pm

Coffee Break

3:30 pm – 5:30 pm

Oral Session 7

Applications and Components

Richard Ness, Cymer, Inc., Session Chair

South Seas G

3:30 pm – 3:45 pm
701

HIGH-VOLTAGE/ HIGH-CURRENT PULSE POWER FOR CIVIL, COMMERCIAL, RESEARCH, AND MILITARY TESTING APPLICATIONS - PART IV: PULSE MAGNETIC WELDING

Amit Izhar, Yuri Livshiz
R&D, Pulsar Ltd., Yavne, Israel

3:45 pm – 4:00 pm
702

MAGNETIC PULSE COMPRESSOR MODULATIONS FOR HIGH VOLTAGE, LOW ENERGY APPLICATIONS

William Nunnally
Electrical & Computer Engineering, University of Missouri, Columbia, MO, United States

4:00 pm – 4:15 pm
703

IMPULSE CURRENT CAPABILITY OF COAXIAL CABLES IN HIGH CURRENT APPLICATIONS

Werner Hartmann, Michael Roemheld
Corporate Technology PS 5, Siemens AG, Erlangen, Germany

4:15 pm - 4:30 pm
704

PULSE POWER CAPACITORS

Fred MacDougall¹, Richard Jow², Joel Ennis¹, S.P.S. Yen³, X. H. Chip Yang¹, Janet Ho²
¹*General Atomics Electronic Systems, Inc., San Diego, CA, United States*²*US Army Research Laboratory, Adelphi, MD, United States*³*NASA Jet Propulsion Laboratory, Pasadena, CA, United States*

4:30 pm – 4:45 pm
705

SPECIFICALLY MEASUREMENT PROTECTIONS FOR HIGH VOLTAGE AND HIGH POWER ON MEGAJOULE LASER

Dominique Rubin de Cervens¹, Jean Claude Gomme², Joel Raimbourg¹, Jacques Baggio¹,
Patrick Bauer³, Patrick Trochet³

¹Commissariat à l'Energie Atomique, DAM - ILE de FRANCE, Bruyères Le Châtel, France/²Commissariat à l'Energie Atomique, DAM - CESTA, Le Barp, France/³EADS, Nucléides

4:45pm – 5:00 pm
706

APPLICATIONS OF POWER MODULATOR TECHNOLOGY TO IGNITION AND COMBUSTION

Daniel Singleton, Charles Cathey, Andras Kuthi, Martin Gundersen
Electrical Engineering, University of Southern California, Los Angeles, CA, United States

5:00 pm – 5:15 pm
707

APPLICATIONS OF REPETITIVE PULSED POWER, RESEARCH AT TUE

Bert van Heesch, Guus Pemen, Hans Winands, Zhen Liu, Dorota Pawelek, Stefan Voeten
Electrical Engineering, Technische Universiteit Eindhoven, Eindhoven, Netherlands

5:15 pm – 5:30 pm
708

DESIGN AND TESTING OF A HIGH-POWER PULSED LOAD

Alex Pokryvailo, Arkady Kogan
Spellman High Voltage Corporation, Hauppauge, NY, United States

3:30 pm – 5:30 pm

Oral Session 8

Opening and Closing Switches

Hulya Kirkici, Auburn University, Session Chair
South Seas H

3:30 pm – 3:45 pm
801

EXPERIMENTAL RESULTS OF A HIGH VOLTAGE WIDEBAND LOAD DRIVEN BY A PULSE TRANSFORMER AND OPENING SWITCH POWER CONDITIONING SYSTEM

K. A. O'Connor, R. D. Curry
Center for Physical and Power Electronics, University of Missouri, Columbia, MO, United States

3:45 pm – 4:00 pm
802

PLASMA SOURCE FOR A MINIATURE AND REPETITIVE PLASMA OPENING SWITCH

Rajesh Kumar, Bucur Novac, Ivor Smith, Charles Greenwood
Electronic and Electrical Engineering, Loughborough University, Loughborough, United Kingdom

4:00 pm – 4:15 pm
803

EFFECTS OF LASER TRIGGERING PARAMETERS ON RUNTIME AND JITTER OF A GAS SWITCH

Brian Hutsel, Scott Kovaleski, Dustin Sullivan, John Gahl
Electrical and Computer Engineering, University of Missouri, Columbia, MO, United States

4:15 pm – 4:30 pm
804

JITTER AND RECOVERY RATE OF A 50 kV, 100 Hz TRIGGERED SPARK GAP WITH HIGH PRESSURE GAS MIXTURES

Yeong-Jer Chen, John Mankowski, John Walter, James Dickens, Magne Kristiansen
Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

4:30 pm – 4:45 pm
805

LOW-INDUCTANCE GAS SWITCHES FOR LINEAR TRANSFORMER DRIVERS

Joseph Woodworth¹, Jeffrey Alexander¹, Fredrick Gruner⁴, James Blickem², Harold Anderson³,
Michel Harden³

¹Sandia National Laboratories, Albuquerque, NM, United States/²Ktech Corporation, Albuquerque, NM, United States/³NSTech, Los Alamos, NM, United States/⁴Kinetic LLC, The Dales, OR, United States

4:45 pm – 5:00 pm
806

**AN EXAMINATION OF THE STATISTICS OF BREAKDOWN IN A PRESSURIZED,
FLOWING, SYNTHETIC OIL DIELECTRIC**
P. Norgard, R. Curry
Center for Physical and Power Electronics, University of Missouri, Columbia, MO, United States

5:00 pm – 5:15 pm
807

6H-SiC AND GaN EXTRINSIC PHOTOCONDUCTIVE SWITCHES
Jim Sullivan, Joel Stanley
Beam Research Program, Lawrence Livermore National Laboratory, Livermore, CA, United States

5:15 pm – 5:30 pm
808

HIGH VOLTAGE GAS GAP SWITCHING WITH PICOSECOND ACCURACY
Michael Yalandin¹, Konstantin Sharypov¹, Valery Shpak¹, Sergei Shunailov¹, Gennady Mesyats²
¹*Institute of Electrophysics UB RAS, Ekaterinburg, Russia*²*Lebedev Physical Institute RAS, Moscow, Russia*

6:30 pm – 7:30 pm
7:30 pm – 10:00 pm

**Banquet Reception
Awards Banquet**

Friday, May 30

7:30 am – 8:30 am
8:00 am – 5:30 pm
8:00 am – 5:00 pm
8:30 am - 8:40 am
8:40 am – 9:30 pm

**Continental Breakfast
Conference Registration and Office Hours
Exhibits Open
Introduction of High Voltage Workshop Plenary Speaker
THE OPERATION AND POSSIBLE APPLICATIONS OF
NANODIELECTRICS**
J. Keith Nelson
ECSE, Rensselaer Polytechnic Institute, Troy, NY, United States

9:30 am – 10:30 am

**High Voltage Workshop 1
Insulating Materials: Design Considerations
South Seas G**

9:30 am – 9:50 am
1HVW1

**DIELECTRIC BREAKDOWN OF POLYMERIC INSULATIONS AGED AT
HIGH TEMPERATURES**
Weijun Yin¹, Patricia Irwin¹, Daniel Schweickart²
¹*Electronics and energy conversion, GE Global Research Center, Niskayuna, NY, United States*²*Electronics and energy conversion, GE Global Research Center, Niskayuna, NY, United States*³*Wright Patterson Air Force Base, Air Force Research Laboratory, Dayton, OH, United States*

9:50 am – 10:10 am
1HVW2

**DESIGN CONSIDERATIONS FOR VERY HIGH VOLTAGE DC ELECTRON
GUNS AND INDUSTRIAL TUBES***
Bruce Dunham¹, J. Scott Price²
¹*Department of Physics and Laboratory for Elementary Particle Physics, Cornell University, Ithaca, NY, United States*²*General Electric Global Research Center, Niskayuna, NY, United States*

10:10 am – 10:30 am
1HVW3

**CLASSIFICATION OF ELECTRIC FIELDS AND FIELD DEPENDENT
BEHAVIOR OF DIELECTRICS**
Ravindra Arora
EE, Indian Institute of Technology, Kanpur, Kanpur, India

10:30 am – 10:50 am

Break

9:30 am – 12:00 pm

Oral Session 9

Configurations and Applications
Stuart Moran, Naval Surface Weapons Center, Dahlgren,
Session Chair
South Seas H

9:30 am – 9:45 am
901

**A PULSE COMPRESSION RING FOR HIGH EFFICIENCY ELECTRIC
PROPULSION**
T. L. Owens
SRG, West Virginia High Technology Foundation, Fairmont, WV, United States

9:45 am – 10:00 am
902

**MODELLING OF THE SUPERSWARF ACCELERATORS AT AWE
ALDERMASTON**
Aled Jones, David Bittlestone, Graham Cooper, John McLean, Jim Threadgold
Atomic Weapons Establishment, Aldermaston, Berkshire, RG7 4PR, United Kingdom

10:00 am – 10:15 am
903

PULSE DROOP COMPENSATION USING PWM TECHNIQUE
Bob Richardson, Tudor Pike
RF systems, e2v Technologies, Chelmsford, United Kingdom

10:15 am – 10:30 am
904

**HIGH POWER, HIGH FREQUENCY MODULATORS FOR PHYSICS
RESEARCH APPLICATIONS**
David Cook, Michael Bland, Fabio Carastro, Jon Clare, Pat Wheeler
*Electrical and Electronic Engineering, University of Nottingham, Nottingham,
United Kingdom*

10:30 am – 10:50 am

Coffee Break

10:50 am – 11:50 am

High Voltage Workshop 2
Insulating Materials: Energy Storage
South Seas G

10:50 am – 11:10 am
2HVW1

**HIGH-VOLTAGE ENERGY STORE IN ORGANIC COMPOSITE
DIELECTRICS FOR COMPACT PULSED POWER#**
Jose Rossi^{*1}, Palmarin Castro¹, Marvin Roybal¹, Edl Schamiloglu¹,
Stephanie Sawhill², Ender Savrun²
¹*ECE, UNM, Albuquerque, NM, United States*²*Sienna Technologies
Inc, Woodinville, WA, United States*

11:10 am – 11:30 am
2HVW2

**ENERGY STORAGE IN POLYMER FILMS WITH HIGH DIELECTRIC
CONSTANT FILLERS**
Steven Boggs¹, Ling An¹, Jeffrey Calame²
¹*Institute of Materials Science, University of Connecticut, Storrs, CT, United
States*²*Naval Research Laboratory, Washington, DC, United States*

11:30 am – 11:50 am
2HVW3

**IMPLICATIONS OF ADVANCED CAPACITOR DIELECTRICS FOR
PERFORMANCE OF METALIZED FILM CAPACITOR WINDINGS**
Janet Ho¹, Richard Jow¹, Steven Boggs²
¹*Army Research Laboratory, Adelphi, MD, United States*²*Institute of Materials
Science, Departments of Physics and Electrical Engineering, University of
Connecticut, Storrs, CT, United States*

10:50 am – 11:50 am

Oral Session 9 (continued)
Configurations and Applications
South Seas H

10:50 am – 11:05 pm
905

**CHARGING A BATTERY-POWERED DEVICE WITH A FIBER-OPTICALLY
CONNECTED PHOTONIC POWER SYSTEM FOR ACHIEVING HIGH-
VOLTAGE ISOLATION**

David Lizon, Jack Gioia, Gregory Dale, Hans Snyder
Los Alamos National Laboratory, Los Alamos, NM, United States

11:05 am – 11:20 pm
906

**POLYPHASE RESONANT CONVERTER-MODULATORS FOR THE KAERI
PROTON ENGINEERING FRONTIER PROJECT ACCELERATOR
KLYSTRON RF AMPLIFIER SYSTEM**

William Reass¹, Robert Gribble¹, Jack McCarthy²
¹*Los Alamos National Laboratory, Los Alamos, NM, United States*/²*Dynapower
Corporation, South Burlington, VT, United States*

11:20 am – 11:35 am
907

**FAST TOTEM-POLE GRID-CATCH MOD-ANODE MODULATOR FOR THE
INDIANA UNIVERSITY “LENS” KLYSTRON RF AMPLIFIER SYSTEM**

William Reass¹, William Roybal¹, Jerry Davis¹, Tom Rinckel², Vladimir Derenchuk²
¹*Los Alamos National Laboratory, Los Alamos, NM, United States*/²*Indiana University
Cyclotron Facility, Bloomington, IN, United States*

11:35 am – 11:50 am
908

**ANALYSIS OF IGBT BASED POWER SUPPLY FOR PULSED POWER
APPLICATIONS**

Rajendrasinh Jadeja¹, Smita Kanitkar², Anurag Shyam³
¹*Electrical & Electronics Engg, C U Shah College of Engg. & Tech., Wawhwan City,
India*/²*Electrical Engg. Dept., M S University, Baroda, Vadodara, India*/³*Pulsed Power
Lab, Institute for Plasma Research, Gandhinagar, India*

11:50 am – 1:30 pm

Lunch

1:30 pm – 2:30 pm

**High Voltage Workshop 3
High Frequency Breakdown and High Gradient Structures
South Seas G**

1:30 pm – 1:50 pm
3HVW1

**WINDOW FLASHOVER INITIATION UNDER PULSED MICROWAVE
EXCITATION**

John Krile, Greg Edmiston, James Dickens, Hermann Krompholz, Andreas Neuber
*Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX,
United States*

1:50 pm – 2:10 pm
3HVW2

**GLOBAL MODEL FOR HIGH POWER MICROWAVE BREAKDOWN AT
HIGH PRESSURE**

Sang Ki Nam, John P. Verboncoeur
Nuclear Engineering, University of California, Berkeley, CA, United States

2:10 pm – 2:30 pm
3HVW3

**A 6.25 MV LASER TRIGGERED GAS SWITCH FOR THE REFRUBISHED Z
ACCELERATOR**

Keith LeChien¹, Mark Savage¹, William Stygar¹, Peter Wakeland², Victor Anaya², John
Lott²
¹*Advanced Accelerator Physics, Sandia National Laboratories, Albuquerque, NM,
United States*/²*Ktech Corporation, Albuquerque, NM, United States*

2:30 pm – 2:50 pm

Break

1:30 pm – 2:50 pm

**Poster Session 3
Opening and Closing Switches, Applications, Configurations,
Repetitive Pulsed Power Systems and Accelerators
Randy Curry, University of Missouri, Session Chair**

South Seas E

Opening and Closing Switches

- 3P1 **DEVELOPMENT OF A 200-KV TEST STAND AND EXPERIMENTAL STUDY OF OPTICAL TRIGGERING METHODS FOR LTD SWITCHES**
Dustin Sullivan¹, Scott Kovaleski¹, Brian Hutsel¹, John Gahl²
¹Electrical and Computer Engineering, University of Missouri, Columbia, MO, United States²Chemical Engineering, University of Missouri, Columbia, MO, United States
- 3P2 **NUMERICAL STUDIES ON DYNAMICAL RESISTANCE OF GAP SWITCH**
Lawrence Wang
Electromagnetic Survivability Division, SV, White Sands Missile Range, NM, United States
- 3P3 **RESISTANCE AND INDUCTANCE OF A LASER TRIGGERED AIR SPARKGAP IN THE RANGE 30KV / 10KA / 50NS**
Rene Bailly-Salins
DPTA, CEA, ARPAJON, France
- 3P4 **PRELIMINARY EXPERIMENTS ON RECOVERY OF SPARK GAPS**
Xinjing Cai, Xiaobing Zou, Lei Ma, Xinxin wang
Department of Electrical Engineering, Tsinghua University, Beijing, China
- 3P5 **DEPENDENCE OF THE DELAY TIME ON THE MEAN ELECTRON SEED KINETIC ENERGY IN A PSEUDOSPARK DISCHARGE**
Selma Cetiner, Peter Stoltz
Tech-X Corp., Boulder, CO, United States
- 3P6 **SMALL MAGNETIC PLASMA OPENING SWITCH (MPOS)**
Max Chung
Electronics Engineering, Southern Taiwan University, Tainan, Taiwan
- 3P7 **VIABLE OPTIONS FOR IMPROVED SWITCH PERFORMANCE ON EROS**
Stephen Clough
Pulsed Power Group, AWE, Aldermaston, United Kingdom
- 3P8 **DESIGN AND COMMISSIONING OF THE ENERGY EXTRACTION SYSTEMS FOR THE LHC CORRECTOR MAGNET CIRCUITS**
Gert Jan Coelingh¹, Knud Dahlerup-Petersen¹, Anatoly Medvedko², Alexandr Erokhin², Konstantin Gorchakov²
¹Accelerator Technology Department, CERN European Organization for Nuclear Research, Geneva, Switzerland²Radio Physics Department, BINP Institute for Nuclear Physics, Akademgorodok, Russia
- 3P9 **SIMULATION AND OPERATIONAL EXPERIENCE WITH ENERGY EXTRACTION IN THE LHC SUPERCONDUCTING MAGNET CHAINS**
Knud Dahlerup-Petersen¹, Gert-Jan Coelingh¹, Boris Kazmin²
¹AT, CERN, Geneva, Switzerland²IHEP, Protvino, Russia
- 3P10 **DEVELOPMENT OF MULTIGAP PSEUDOSPARK SWITCH FOR SIS100/300**
Klaus Frank¹, Isfried Petzenhauser², Byung-Joon Lee³, Udo Bleil²
¹Department of Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States²Gesellschaft fuer Schwerionenforschung mbH, Darmstadt, Germany³J.W.Goethe University, Frankfurt, Germany
- 3P11 **THE PRIMARY STUDY ON PULSED POWER CONDITIONING TECHNOLOGY BASED ON TWO-STAGED OPENING SWITCHES**
shirong Hao, weiping Xie, yingmin Dai, wenhui Han, minhua Wang, nanchuan Zhang
P.O.Box 919-108, Institute of Fluid Physics, Mianyang, Sichuan, China
- 3P12 **PHOTOCATHODES FOR COMPACT OPTICAL TRIGGERING OF BACK-LIGHTED THYRATRONS**

Chunqi Jiang¹, Hsiu-Sheng Hsu¹, Hao Chen¹, Esin Sozer¹, Martin A. Gundersen¹, Ryan J. Umstadd²
¹Department of EE-Electrophysics, University of Southern California, Los Angeles, CA, United States²Oak Ridge National Laboratory, Oak Ridge, TN, United States

3P13

CHARACTERISTICS OF COLD-ELECTRODE EMITTER MATERIALS FOR PULSED HOLLOW CATHODE DISCHARGES

Shaomao Li, Kalyan Koppisetty, Hulya Kirkici
Electrical and computer engineering, Auburn University, Auburn, AL, United States

3P14

OPENING SWITCH UTILIZING STRESS INDUCED CONDUCTION IN PMMA

Curtis Lynn, Andreas Neuber, John Krile, James Dickens
Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States

3P15

CORONA STABILISED PLASMA CLOSING SWITCHES

Scott MacGregor¹, Igor Timoshkin¹, Joseph Beveridge¹, Jane Lehr²
¹Institute for Energy and Environment, University of Strathclyde, Glasgow, United Kingdom²Sandia National Laboratories, Albuquerque, NM, United States

3P16

CURRENT INTERRUPTION PROPERTIES OF SELF-RECOVERING MICRO FUSE BY APPLYING A PULSE-SHAPED OVERCURRENT

Shinya Ohtsuka, Hiroki Suetomi, Fumihiro Akiyoshi, Shigeru Mitarai, Masayuki Hikita
Electrical Engineering, Kyushu Institute of Technology, Kitakyushu, Japan

3P17

DYNAMIC CHARACTERISTICS OF CORONA DISCHARGES IN POINT-PLANE ELECTRODE TOPOLOGIES INFLUENCED BY RESIDUAL SPACE CHARGE

Igor Timoshkin¹, Scott MacGregor¹, Martin Given¹, Joe Beveridge¹, Jane Lehr²
¹Institute for Energy and Environment, University of Strathclyde, Glasgow, United Kingdom²Sandia National Laboratories, Albuquerque, NM, United States

3P18

PARTICLE SIMULATION OF ULTRAFAST CLOSING SWITCH AT SUB-ATMOSPHERIC PRESSURES

Jordan Chaparro, Hermann Krompholz, Andreas Neuber, Lynn Hatfield
Center for Pulsed Power and Power Electronics, Department of Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States

3P19

STATISTICAL AND FORMATIVE DELAY TIMES FOR SUB-NANOSECOND BREAKDOWN AT SUB-ATMOSPHERIC PRESSURE

Jordan Chaparro, Lynn Hatfield, Hermann Krompholz, Andreas Neuber
Center for Pulsed Power and Power Electronics, Department of Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States

3P20

A 65 KA, 7 KV DC OPENING SWITCH FOR ELECTRO-THERMAL-CHEMICAL GUN

Asaf Yaniv, Alex Pokryvailo, Eli Shviro, Amit Kesar
Propulsion Physics Laboratory, Soreq NRC, Yavne, Israel

3P21

SN-SERIES PSEUDOSPARK SWITCHES OPERATING COMPLETELY WITHOUT PERMANENT HEATING. NEW PROSPECTS OF APPLICATION IN PULSED POWER

Victor Bochkov¹, Eugeny Bogoljubov², Dmitry Bochkov¹, Vladimir Dyagilev¹, Boris Lemeshko², Vladimir Ushich¹
¹Pulsed Technologies Ltd., Ryazan, Russia²All-Russia Research Institute of Automatics, Moscow, Russia

3P22

PULSED POWER APPLICATIONS OF PSEUDOSPARK SWITCHES

Victor Bochkov¹, Dmitry Bochkov¹, Igor Gnedin¹, Piotr Panov¹, Oleg Shabalov²
¹Pulsed Technologies Ltd., Ryazan, Russia²Iniciativa Ltd., Ryazan, Russia

Applications

3P23

ANALYTIC AND NUMERICAL ANALYSES OF THE ELECTRON MOTION

DURING ION SHEATH FORMATION

Gan Kongyin
*Lab of FEL Research, Institute of Applied Electronics, China Academy of Engineering
Physics, Mianyang, China*

3P24

PHOTOELECTRIC STIMULATED EMISSION FROM THIN FILM OPTICALLY ENHANCED NANO-FOREST CATHODES

W. Zeier¹, S. Kovaleski¹, K. McDonald²
¹*Dept. of Electrical and Computer Engineering, University of Missouri, Columbia, MO,
United States*²*Sci-Eng Solutions, Columbia, MO, United States*

Configurations

3P25

MPM OPTIMIZED FOR IMPROVED THERMAL MANAGEMENT

Thierry Beck¹, Philippe Trani¹, Patrick Antoine¹, Alain Moreau¹, Philippe Thouvenin¹,
Todd Hansen²
¹*Thales Electron Devices, Velizy, France*²*Thales Components Corporation, Totowa, NJ,
United States*

3P26

COMPACT HIGH VOLTAGE GERATOR

Vladimir Engelko¹, E. P. Bolschakov¹, D. I. Getman¹, Georg Mueller²
¹*MIT, Efremov Institute of Electrophysical Apparatus, St. Petersburg, Russia*²*IHM,
Forschungszentrum Karlsruhe, Karlsruhe, Germany*

3P27

LOW COST SOLID STATE PULSE MONITOR

Harivithal Mangalvedekar¹, A.S. Paithankar¹, Lalit Bagul¹, D.N. Barve², Deviprada
Chakravarthy², Kavita Dixit²
¹*VJTI- Siemens-AICTE High Voltage Lab, V. J. Tech. Institute, Mumbai,
India*²*accelerator and Pulas Power Division, Bhabha Atomic Research Centre, Mumbai,
Iran*

3P28

FORMERS OF HIGH VOLTAGE RECTANGULAR IMPULSES FOR POWERFUL MICROWAVE DEVICES

BORIS MOVSHEVICH
Russian Academy of Sciences, Institute of Applied Physics, Nizhny Novgorod, Russia

3P29

SHOCK WAVE SIMULATION OF FERRITE-FILLED COAXIAL NONLINEAR TRANSMISSION LINES

William Sullivan III, James Dickens
*Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX,
United States*

3P30

ANALYSIS OF BEHAVIOUR OF THE 6MW KLYSTRON MODULATOR FOR THE 10MeV, 10KW INDUSTRIAL ELECTRON LINAC

Abhijit Tillu¹, Kavita Dixit¹, Shiv Chandan¹, Vivek Yadav¹, Kailash Mittal¹, Deviprada
Chakravarthy¹
¹*Accelerator and Pulse Power Division, Bhabha Atomic Research Centre, Mumbai,
India*²*M.E.D., SAMEER, Mumbai, India*

Repetitive Pulsed Power Systems and Accelerators

3P31

NANOSECOND POWER MODULATION IN AN ATMOSPHERIC PRESSURE DC-DRIVEN MICROCAVITY PLASMA DISCHARGE

Milan Begliarbekov, Vladimir Tarnovsky
*Dept. of Physics & Engineering Physics, Stevens Institute of Technology, Hoboken, NJ,
United States*

3P32

PLASMA LENS FOR THE ITEP HEAVY ION ACCELERATOR WITH PSEUDOSPARKS TD11-150K/25 AS SWITCHES

Victor Bochkov¹, Alexandr Drozdovskii², Alexandr Golubev², Dmitry Iosseliani², Yuri
Novozhilov², Victor Yanenko²
¹*Pulsed Technologies Ltd., Ryazan, Russia*²*SSC RF Institute for Theoretical and
Experimental Physics, Moscow, Russia*

- 3P33 **A HIGH POWER PULSE SYSTEM FOR THE BEAM EXTRACTION OF CERN'S LARGE HADRON COLLIDER (LHC)**
E. Carlier, F. Castronuovo, L. Ducimetière, E.B. Vossenber
AB department, CERN, Geneva, Switzerland
- 3P34 **DIFFUSION OF THE PULSED ELECTROMAGNETIC FIELD INTO THE MULTI-LAYER CORE OF INDUCTOR AT PULSED DEVICES**
Volodymyr Chemerys, Iren Borodiy
Theoretical Physics, National Aviation University, Kyiv, Ukraine
- 3P35 **HIGH VOLTAGE NANOSECOND PULSERS WITH MEGAHERTZ REPETITION FREQUENCY FOR ACCELERATOR APPLICATIONS**
Vladimir Efanov, Alexander Kriklenko, Sergei Zazoulin
FID GmbH, Burbach, Germany
- 3P36 **PERFORMANCE OF THE MARX GENERATOR FOR REPETITIVE APPLICATIONS**
H. Heo¹, S.S. Park¹, S. H. Nam¹, D. W. Choi², J. H. So², W. Jang²
¹Accelerator Division, PAL, Pohang, Korea²ADD, Daejeon, Korea
- 3P37 **STUDY ON TEMPERATURE RISE OF METALLIZED CAPACITORS APPLIED TO REPETITIVE PULSE**
Zhonghua KONG¹, Fuchang LIN², Ling, DAI³, Hua LI⁴
¹College of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China²College of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China³College of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China⁴College of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China
- 3P38 **HIGH POWER RADIATING SYSTEM BASED ON A COMPACT PRINTED CIRCUIT BOARD MARX GENERATOR**
Fredrik Olsson¹, Mats Jansson¹, Denny Åberg¹, Magnus Karlsson¹, Berndt-Olof Bergman¹, Robert E. Beverly III²
¹BAE Systems Bofors AB, Karlskoga, Sweden²R. E. Beverly III and Associates, Lewis Center, OH, United States
- 3P39 **STATUS OF 500KV LOW EMITTANCE ELECTRON GUN TEST FACILITY FOR A COMPACT X-RAY FREE ELECTRON LASER AT PAUL SCHERRER INSTITUTE**
Martin Paraliiev, Christopher Gough, Sladjana Ivkovic
Large Research Facilities, Paul Scherrer Institute, Villigen PSI, Switzerland
- 3P40 **MODIFICATION OF CRYSTALLINE MORPHOLOGY OF PVDF AND ITS EFFECT ON ELECTRIC ENERGY STORAGE AND DISCHARGE BEHAVIORS**
Fangxiao Guan, Steven Boggs, Lei Zhu
Institute of Material Science and Department of Chemical, Materials and Biomolecular Engineering, University of Connecticut, Storrs, CT, United States
- 3P41 **REPETITIVE TEST OF PFN MARX FOR PULSE GENERATOR**
Soung-soo Park¹, Hoon Heo¹, Sang-hee Kim¹, Sung-chul Kim¹, Sang-hoon Nam¹, Jin-woo Shin²
¹Accelerator, PAL, POSTECH, Pohang, South Korea²ADD, Daejeon, South Korea
- 3P42 **FAST INJECTION KICKER DESIGN CONCEPT**
Chris Jensen, Alexander Makarov, Iouri Terechkin
Fermi National Accelerator Laboratory, Batavia, IL, United States

2:50 PM – 3:10 PM
3:10 pm – 5:10 pm

Break

Oral Session 10 -

Repetitive Pulsed Power Systems and Accelerators
Greg Dale, Las Alamos National Lab, Session Chair

South Seas H

3:10 pm – 3:25 pm
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COMPACT HV-CAPCITOR CHARGER

Michael Giesselmann¹, Travis Vollmer¹, Jon Mayes², Matt Lara²
¹Center for Pulsed Power & Power Electronics, Texas Tech University, Lubbock, TX, United States²LLC, Applied Physical Electronics, Spicewood, TX, United States

3:25 pm – 3:40 pm
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COMPACT HV-DC POWER SUPPLY

Michael Giesselmann¹, Travis Vollmer¹, Ryan Edwards¹, Thomas Roettger², Madhav (Wally) Walavalkar³
¹ECE, Texas Tech University, Lubbock, TX, United States²Electronic Systems, Northrop Grumman, Sykesville, MD, United States³Marine Systems, Northrop Grumman, Sunnyvale, CA, United States

3:40pm – 3:55 pm
1003

300 kV TESLA TRANSFORMER BASED PULSE FORMING LINE GENERATOR

Rajesh Kumar, Bucur Novac, Partha Sarkar, Ivor Smith, Charles Greenwood
Electronic and Electrical Engineering, Loughborough University, Loughborough, United Kingdom

3:55 pm – 4:10 pm
1004

HIGH VOLTAGE PULSE GENERATORS FOR ACCELERATOR APPLICATIONS

Mikhail Efanov, Kirill Kriklenko, Nikolai Savastianov
FID GmbH, Burbach, Germany

4:10 pm – 4:25 pm
1005

NEW REPETITIVE BIPOLAR SOLID-STATE MARX TYPE MODULATOR

Luis Redondo¹², Hiren Canacsinh¹², José Silva³⁴
¹DEEA, Lisbon Superior Engineering Institute, ISEL, Lisbon, Portugal²Nuclear and Physics Center from Lisbon University, Lisbon, Portugal³DEEC, Technical and Superior Institute, Lisbon, Portugal⁴Center for Innovation in Electrical and Energy Engineering, Lisbon, Portugal

4:25 pm – 4:40 pm
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HIGH SPEED THERMAL IMAGING APPLIED TO A LONG PULSE RESONANT CONVERTER MODULATOR FOR POWER DEVICE RELIABILITY ASSESSMENT

Fabio Carastro¹, Jon Clare¹, Pat Wheeler¹, David Cook¹, Mahera Musallam¹, Michael Bland²
¹School of Electrical and Electronic Engineering, University of Nottingham, Nottingham, United Kingdom²e2v technologies, Chelmsford, United Kingdom

4:40 pm – 4:55 pm
1007

HIGH-VOLTAGE / HIGH-CURRENT PULSE POWER FOR CIVIL, COMMERCIAL, RESEARCH, AND MILITARY TEST APPLICATIONS - PART III - MULTI-MEGA-AMPERE PULSE TRANSFORMERS

Amit Izhar, Yuri Livshiz
R&D, Pulsar Ltd, Yavne, Israel

4:40 pm – 4:55 pm
1008

A 2.5 MV PULSED PHOTO-INJECTOR DEMONSTRATOR FOR RADIOGRAPHIC APPLICATIONS

LEMAIRE jean-louis
CEA-DIF Bruyere, DPTA, ARPAJON, France

2:50 pm – 3:50 pm

High Voltage Workshop 4 Partial Discharge Measurements and Diagnostics

South Seas G

2:50 pm – 3:10 pm
4HVW1

LOW-PRESSURE PARTIAL-DISCHARGE MEASUREMENTS: MONITORING THE INSULATION INTEGRITY OF AIRCRAFT POWER WIRING SYSTEMS

Daniel Schweickart¹, Dennis Grosjean², Donald Kasten³, Stephen Sebo³, Xin Liu^{3,4}
¹Air Force Research Laboratory, Dayton, OH, United States²Innovative Scientific Solutions, Inc., Dayton, OH, United States³Electrical and Computer Engineering, The Ohio State University, Columbus, OH, United States⁴American Electric Power,

Columbus, OH, United States

3:10 pm – 3:30 pm
4HVW2

OIL-PAPER AGING PROPERTIES UNDER ELECTRICAL-THERMAL STRESSES AND EVALUATION WITH PARTIAL DISCHARGE PARAMETERS

Caixin Sun¹, Stanislaw Grzybowski², Jian Li¹, Ruijin Liao¹
¹High Voltage Engineering, Chongqing University, Chongqing, China²Electrical and Computer Engineering, Mississippi State University, Mississippi State, MS, United States

3:30 pm – 3:50 pm
4HVW3

APPROACHES FOR NUMERICAL SIMULATION OF PARTIAL DISCHARGES

Avinash S. Bhangaonkar, S. V. Kulkarni
Electrical Engineering Department, Indian Institute of Technology Bombay, Mumbai, India

3:50 pm – 4:10 pm

Break

4:10 pm – 5:10 pm

**High Voltage Workshop 5
High Voltage Testing and Analytical Techniques
South Seas G**

4:10 pm – 4:30 pm
5HVW1

COMPARATIVE TESTING OF SHIELD TERMINATIONS OF HIGH VOLTAGE CABLES

Alex Pokryvailo, Costel Carp, Cliff Scapellati
Spellman High Voltage Corporation, Hauppauge, NY, United States

4:30 pm – 4:50 pm
5HVW2

ELECTRO-QUASISTATIC HIGH-VOLTAGE FIELD SIMULATION OF INSULATOR STRUCTURES COVERED WITH THIN RESISTIVE POLLUTION OR NONLINEAR GRADING MATERIAL

Daniel Weida, Thorsten Steinmetz, Markus Clemens
Chair for Theory in Electrical Engineering and Computational Electromagnetics, Helmut-Schmidt-University, University of the Federal Armed Forces, Hamburg, Germany

4:50 pm – 5:10 pm
5HVW3

HIGH FREQUENCY PERFORMANCE OF NON-LINEAR STRESS GRADING SYSTEMS

Hassan El-Kishky, Ahmad Eid
Department of Electrical Engineering, The University of Texas at Tyler, Tyler, TX, United States

5:10 pm

Closing Remarks

Saturday, May 31

7:00 am – 8:00 am
7:00 am – 8:00 am
8:00 am – 12:00 am

Short Course Registration

Continental Breakfast

Short Course 1

Pulsed Power Engineering

. Andreas A. Neuber, P.E

Short Course 2

Solid-State Switching: Applications and Device Trends

William Reass, Jerry Hudgins, Michael S. Mazzola