

2015 Pulsed Power Conference Program

As of 5/4/2015 – Subject to minor modification

Session PPC-PLEN-1: Monday Plenary

Monday, June 1, 08:00-09:15, Salon F

Session Chair: David Alan Wetz, University of Texas at Arlington

8:00 PPC-PLEN-1-1 NANOSECOND PULSED ELECTRIC FIELDS FOR NOVEL MEDICAL AND ENVIRONMENTAL APPLICATIONS

J. Kolb

Pulsed Power, Leibniz Institute for Plasma Science and Technology, Greifswald, Germany

Session PPC-O-1: Medical, Biological, Environmental, & Industrial Applications I

Monday, June 1, 09:45-12:15, Salon G

Session Chair: Hidenori Akiyama, Kumamoto University

9:45 PPC-O-1-1 (invited) New Topologies in Electromechanical Systems - A New Paradigm

O. S. Zucker

Polarix Corporation, Annandale, VA, United States

10:15 PPC-O-1-2 Nanosecond Pulsed UV Excimer Microdischarges for Photoconductive Switch Triggering

J. Stephens, D. Mauch, S. Feathers, J. Mankowski, J. Dickens, A. Neuber

Texas Tech Center for Pulsed Power and Power Electronics, Lubbock, United States

10:30 PPC-O-1-3 Impact of High Pulsed Magnetic Fields on the Formation of Corrosion on Metallic Alloys

G. G. Gnegy-Davidson¹, D. A. Wetz¹, D. N. Wong²

¹*Electrical Engineering Department, University of Texas at Arlington, Arlington, TX, United States*

²*Materials Science and Engineering Department, University of Texas at Arlington, Arlington, TX, United States*

10:45 PPC-O-1-4 Decolorization of Organic Dyes Using Corona Discharge Plasma System for Industrial Wastewater Treatment

A. El-Tayeb¹, A. H. El-Shazly¹, M. F. El-Kady¹, A. B. Abd-Elrahman²

¹*Chemicals and Petrochemicals Engineering Department,, Egypt-Japan University of Science and Technology, New Borg El-Arab City, Alexandria, Egypt*

²*Electronics and Communications Engineering Department, Egypt-Japan University of Science and Technology, New Borg El-Arab City, Alexandria, Egypt*

11:00 PPC-O-1-5 Behavior of High Repetition Streamer Discharges Produced in Flowing Water

M. Akiyama¹, K. Takaki¹, A. Yamamoto², H. Hosseini³, H. Akiyama³

¹*Faculty of Engineering, Iwate University, Morioka, Iwate, Japan*

²*Graduate School of Science and Technology, Kumamoto University, Kumamoto, Japan*

³*Institute of Pulsed Power Science, Kumamoto University, Kumamoto, Japan*

11:15 PPC-O-1-6 Pulsed Corona Discharges Generated in Water for the Degradation of Pharmaceutical Residues

J. F. Kolb¹, R. Banaschik¹, P. J. Bednarski², P. Lukes³

¹*INP Greifswald, Greifswald, Germany*

²*University of Greifswald, Greifswald, Germany*

³*Institut of Plasma Physics, Prague, Czech Republic*

11:30 PPC-O-1-7 Investigation of Difference of Origin of ROS Generated in a Cell by Frequency Components of Pulsed Electric Field

Y. Minamitani, Y. Kobayashi, R. Kageyama

Yamagata University, Yonezawa, Japan

11:45 PPC-O-1-8 Investigation of Capacity Enlargement of a Reactor for Water Treatment by Pulsed Streamer Discharge

T. Sugai¹, T. Maruyama¹, A. Tokuchi², W. Jiang¹

¹Extreme Energy-Density Research Institute, Nagaoka University of Technology, Nagaoka, Japan

²Pulsed Power Japan Laboratory, Kusatsu, Japan

12:00 PPC-O-1-9 Inactivation of Bacteria by Combined Treatments with Pulsed Electric Fields and Non-Thermal Plasma

J. F. Kolb¹, J. Zhuang¹, Q. Zhang², J. Fang²

¹INP Greifswald, Greifswald, Germany

²Peking University, Beijing, China

Session PPC-O-2: Dielectric Breakdown

Monday, June 1, 09:45-12:15, Salon F

Session Chair: Hulya Kirkici, Auburn University

9:45 PPC-O-2-1 Performance of a Radial Vacuum Insulator Stack

M. E. Savage, B. S. Stoltzfus, K. N. Austin, P. A. Jones, W. A. Stygar, N. R. Joseph, J. K. Moore

Dept 1651, Sandia National Laboratories, Albuquerque, NM, United States

10:00 PPC-O-2-2 Pulsed Electrical Breakdown with Intervening Granular Materials

K. M. Williamson, L. B. Biedermann, H. P. Hjalmarson, R. Coats

Sandia National Laboratories, Albuquerque, NM, United States

10:15 PPC-O-2-3 Measurement of Ion Concentration in Plasma Bunches of Nanosecond Vacuum Surface Flashover at 140 kV

I. F. Punanov¹, R. V. Emlin¹, P. A. Morozov¹, S. O. Cholakh²

¹Institute of Electrophysics of the Ural Division of the Russian Academy of Sciences, Yekaterinburg, Russian Federation

²Ural Federal University, Yekaterinburg, Russian Federation

10:30 PPC-O-2-4 The Dielectric Strength of High Frequency Metamaterial Composites

K. M. Noel, R. D. Curry, A. M. Pearson, K. A. O'Connor

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

10:45 PPC-O-2-5 Characteristics of Positive Pulse Arc Discharge in Supercritical Carbon Dioxide

T. Furusato¹, H. Tanoue², M. Ota², T. Imamichi², H. Akiyama², Y. Matsuda¹, T. Fujishima¹, T. Yamashita¹

¹Graduate School of Engineering, Nagasaki University, Nagasaki, Japan

²Graduate School of Science and Technology, Kumamoto University, Kumamoto, Japan

11:00 PPC-O-2-6 Dielectric-Directed Surface Flashover under Atmospheric Conditions

L. B. Biedermann, K. M. Williamson, H. P. Hjalmarson, C. M. Moore, R. S. Coates

Sandia National Laboratories, Albuquerque, NM, United States

11:15 PPC-O-2-7 Pulsed Vacuum Breakdown Measurements with a 1-MV Generator*

R. J. Allen¹, D. D. Hinshelwood¹, J. W. Schumer¹, I. M. Rittersdorf¹, S. L. Jackson¹, P. F. Ottinger²

¹Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

²Consultant through Engility Corp., Chantilly, VA, United States

11:30 PPC-O-2-8 (invited) Experimental Observation of Photoionization Relevant Emission from Developing Low Temperature Plasma in Air

J. Stephens, A. Fierro, S. Beeson, J. Dickens, A. Neuber

Texas Tech Center for Pulsed Power and Power Electronics, Lubbock, TX, United States

12:00 PPC-O-2-9 Electrical Breakdown Involving a Gas-Solid Interface

H. P. Hjalmarson, L. B. Biedermann, F. J. Zutavern, C. H. Moore, K. M. Williamson

Sandia Labs, Albuquerque, NM, United States

Session PPC-O-3: Generators, Drivers, PFNs, and Alternate Technologies I

Monday, June 1, 09:45-12:15, 615 AB

Session Chair: Joseph Schumer, Naval Research Laboratories

9:45 PPC-O-3-1 Super Capacitor Based Modular High Power Solid State Programmable Pulse Generator

I. Yaqub, A. Dunlop, R. Scott

Power assemblies, Dynex Semiconductor Ltd., Lincoln, United Kingdom

10:00 PPC-O-3-2 A Modular, High Rep-Rate, Fast-Risetime, Optically-Isolated, Pulse Trigger Generator

D. H. Barnett¹, J. M. Parson¹, C. F. Lynn¹, P. M. Kelly¹, J. C. Dickens¹, A. A. Neuber¹, J. J. Mankowski¹, S. E. Calico²,

M. C. Scott²

¹*Center for Pulsed Power & Power Electronics, Texas Tech University, Lubbock, TX, United States*

²*Missile and Fire Control, Lockheed Martin, Grand Prairie, TX, United States*

10:15 PPC-O-3-3 Experimental Study of the System Parameters for the Operation of a Liquid Dielectric Marx Generator

R. E. Bischoff

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

10:30 PPC-O-3-4 An Alternate Approach to High Precision Liner Impactors for Shock Wave Applications

R. E. Reinovsky¹, W. L. Atchison¹, C. R. Rousculp¹, A. M. Buyko², S. F. Garanin², V. B. Yakubov²

¹*Los Alamos National Laboratory, Los Alamos, NM, United States*

²*RFNC-VNIIEF, Sarov, Russia*

10:45 PPC-O-3-5 (invited) Maintaining High Reliability PFN Marxes on Darht II

K. E. Nielsen, M. A. Bastian, W. L. Gregory, M. Sanchez, C. R. Rose

DARHT Physics and Pulsed Power, Los Alamos National Lab, Los Alamos, NM, United States

11:15 PPC-O-3-6 Pulse Current Source Based on Explosive Magnetic Generator in the Mobile Test Complex

V. E. Fortov, A. V. Koslov, A. V. Shurupov, M. A. Shurupov, V. E. Zavalova

Joint Institute for High Temperature of RAS, Moscow, Russian Federation

11:30 PPC-O-3-7 Testing of a Novel Permanent Magnet Compensated Pulsed Alternator

H. Wang, K. Liu, J. Feng, P. Ao, B. Zhu, Z. Zhang

College of Aerospace Science and Engineering, National University of Defense Technology, Changsha, Hunan, China

11:45 PPC-O-3-8 Matching a (Sub) Nanosecond Pulse Source to a Coaxial Streamer Plasma Reactor

T. Huiskamp, E. J. M. van Heesch, A. J. M. Pemen

Electrical Engineering, Electrical Energy Systems, Eindhoven University of Technology, Eindhoven, The Netherlands

12:00 PPC-O-3-9 The Progress on Mixed-Mode LTD for Repetitive Operations

Z. Liangji, M. Wang, Z. Le, C. Lin, G. Fan, X. Weiping, D. Jianjun

Institute of Fluid Physics, CAEP, Mianyang, China

Session PPC-P-1: Medical, Biological, Environmental, & Industrial Applications - Poster I

Poster Session

Monday, June 1, 13:30-15:00, Salon H

Session Chair: Georg Mueller, Karlsruhe Institute of Technology

PPC-P-1-1 An All Solid-State Pulse Generator for Raising the Hydrophobicity of Cotton Fabrics

W. Chen, J. Rao, Z. Li

School of Optical-Electrical and Computer Engineering, University of Shanghai for Science and Technology, Shanghai, China

PPC-P-1-2 Simulation Studies on the Impact of the Firing of Action Potential of Myocytes with Bipolar Pulses

R. Zhang, C. Li, S. Rui

Chongqing University, Chongqing, China

PPC-P-1-3 Using Electrode Geometry and Electric Pulse Parameters to Control Atmospheric Pressure Plasma Formation

A. L. Garner¹, S. P. M. Bane², A. J. Fairbanks¹, B. -S. Chen², R. S. Brayfield II¹

¹*Nuclear Engineering, Purdue University, West Lafayette, IN, United States*

²*Aeronautics and Astronautics, Purdue University, West Lafayette, IN, United States*

PPC-P-1-4 Electrical Conductivity Changes in Cell Suspensions During Electric Pulses

A. J. Fairbanks, A. Vadlamani, T. Whitmer, A. L. Garner

Nuclear Engineering, Purdue University, West Lafayette, IN, United States

PPC-P-1-5 Pulse-Width-Modulated Plasma Sound Source

Y. Huang, L. Zhang, Z. Liu, K. Yan

Industrial Ecology and Environment Research Institute, Zhejiang University, Hangzhou, China

PPC-P-1-6 μ PlasmaPring Throughput Enhancement by Pulsed Power Technology

T. Huiskamp¹, A. A. E. Stevens², A. J. M. Pemen¹

¹*Electrical Engineering, Electrical Energy Systems, Eindhoven University of Technology, Eindhoven, The Netherlands*

²*InnoPhysics B.V., Eindhoven, The Netherlands*

PPC-P-1-7 Thermal Effect on Liquid Sterilization Using Intense Pulsed Electric Fields

T. Kajiwara, K. Baba, S. Katsuki, T. Sakugawa, H. Akiyama

Kumamoto University, Kumamoto, Japan

PPC-P-1-8 Effect of Pulsed Discharges on Mycelium Growth of *Sparassis Crispa*

T. Masuoka¹, T. Kawakami¹, T. Kiyoshima¹, C. Asada², Y. Nakamura², K. Teranishi², N. Shimomura²

¹*Graduate School of Advanced Technology, Tokushima Univ, Tokushima, Japan*

²*Institute of Technology and Science, Tokushima Univ, Tokushima, Japan*

PPC-P-1-9 INVESTIGATION OF DISCHARGE APPEARANCE IN REACTOR AND REMOVAL RATIO ON NOX TREATMENT USING NANOSECOND PULSED POWERS

R. Arai¹, N. Kaneda¹, T. Ikemoto¹, T. Ninomiya¹, K. Teranishi², N. Shimomura²

¹*Graduate School of Advanced Technology, Tokushima Univ, Tokushima, Japan*

²*Institute of Technology and Science, Tokushima Univ, Tokushima, Japan*

PPC-P-1-10 INVESTIGATION OF ELECTRODE STRUCTURE FOR DENSE OZONE PRODUCTION USING NANOSECOND PULSED POWERS

T. Ikemoto¹, T. Ninomiya¹, M. Morimoto¹, K. Teranishi², N. Shimomura²

¹*Graduate School of Advanced Technology, Tokushima University, Tokushima, Japan*

²*Institute of Technology and Science, Tokushima University, Tokushima, Japan*

PPC-P-1-11 Analysis of Sound Characteristics Produced by High Voltage Discharges under DC and Pulsed Voltages

C. Ren^{1,2}, J. Wang^{1,2}, P. Yan^{1,2}, T. Wang¹, T. Shao^{1,2}, Y. Sun^{1,2}

¹*Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China*

²*Key Laboratory of Power Electronics and Electric Drive, Chinese Academy of Sciences, Beijing, China*

PPC-P-1-12 Generation of Hydroxyl Radical on Water Treatment Using Nanosecond Pulsed Powers and Its Effect

M. Morimoto¹, K. Shimizu¹, K. Teranishi², N. Shimomura²

¹*Graduate School of Advanced Technology and Science, Tokushima University, Tokushima, Japan*

²*Institute of Technology and Science, Tokushima University, Tokushima, Japan*

PPC-P-1-13 Online Detection Method for Power Transformer Winding Deformation and Movement by Impulse Signal Injection: Safety and Feasibility Validation

Z. Zhao¹, C. Li¹, C. Yao¹, G. Qian², K. Zhang³

¹*State Key Laboratory of Power Transmission Equipment, System Security, and New Technology, Chongqing University, Chongqing, China*

²*Yunnan Electric Power Research Institute, China Southern Power Grid, Kunming, China*

³*Chongqing Electric Power Company, State Grid, Chongqing, China*

PPC-P-1-14 Experimental Study on the Effect of the Bipolar Electro-Pulse Bursts for Killing Cells

S. Dong, C. Yao, Y. Zhao, Y. Zhou, Y. Mi, C. Li

chongqing university, State Key Laboratory of Power Transmission Equipment & System Security and New Technology,
chongqing, China

PPC-P-1-15 Application of Asymmetric Burst Pulse System for Preparation of Transgenic Medaka (*Oryzias latipes*)

S. Kono, A. Yamaguchi, Y. Fukuhara, M. Yoneda, N. Tominaga

National Institute of Technology, Ariake College, Omuta, Fukuoka, Japan

PPC-P-1-16 Practical Online Detection of Internal Winding Faults of EHV Shunt Reactors Based on Impulse Frequency Response Analysis

Z. Zhao¹, C. Yao¹, C. Li¹, B. Luo², L. Zou², Y. Liao²

¹State Key Laboratory of Power Transmission Equipment, System Security, and New Technology, Chongqing University, Chongqing, China

²Electric Power Research Institute, China Southern Power Grid, Guangzhou, China

PPC-P-1-17 Simulation and Calculation of Force on Plasma Membrane Exposed to High-Voltage Pulsed Electric Field

Y. Lv, C. Yao

School of electrical engineering, Chongqing University, Chongqing, China

PPC-P-1-18 Simulation Study on Propagation of the Pulsed Magnetic Field with High Steepness of the Exponential Decay in Normal Tissue and Tumor Tissue

S. Rui, Y. Mi, X. Chen, Y. Chu

Chongqing University, Chongqing, China

PPC-P-1-19 Correlation Between MOSFET Dosimeter Energy Response and Its Shielding Material in Electron-Beam Radiation Environment

S. J. Stankovic¹, R. D. Ilic¹, D. Lazarevic¹, I. Fetahovic², M. Obrenovic³, B. Iricanin³

¹Vinča Institute of Nuclear Sciences, Serbia, Yugoslavia

²State University of Novi Pazar, Serbia, Yugoslavia

³Faculty of Electrical Engineering, University of Belgrade, Serbia, Yugoslavia

PPC-P-1-20 The Construction of Capacitive Voltage Divider for Measuring Ultrafast Pulse Voltage

U. Kovacevic¹, Z. Bajramovic², B. Jovanovic³, D. Lazarevic⁴, S. Djekic⁵

¹Faculty of Electrical Engineering, University of Belgrade, Serbia, Yugoslavia

²Faculty of Electrical Engineering, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

³High School of Technical Sciences Zvečan, Serbia, Yugoslavia

⁴Vinča Institute of Nuclear Sciences, Serbia, Yugoslavia

⁵ElektroDoboj, Electric Power Industry of Republika Srpska, Republika Srpska, Bosnia and Herzegovina

PPC-P-1-21 TIME RESOLVED SPECTROSCOPY OF ATMOSPHERIC PLASMA JET DRIVEN BY PULSED POWER GENERATOR

M. Mori¹, T. Shimizu¹, A. Yamamoto¹, H. Akiyama², T. Sakugawa²

¹Graduate School of Science and Technology, Kumamoto University, Kumamoto, Kumamoto, Japan

²Institute of Pulse Power Science, Kumamoto University, Kumamoto, Kumamoto, Japan

Session PPC-P-2: Electromagnetic Launch - Poster

Poster Session

Monday, June 1, 13:30-15:00, Salon H

Session Chairs: Ian McNab, EMRG Solutions

Ryan Hoffman, Office of Naval Research

PPC-P-2-22 Comparative Analysis of Launcher Characteristic for Railgun with Different Excitation Current Waveform

Y. Xing

Shijiazhuang Mechanical Engineering College, Shijiazhuang, Hebei, China

PPC-P-2-23 Linear Intability Research on the Shaped Charge jet in Passive Electromagnetic Armor

W. Qi

3th department, Shijiazhuang Mechanical Engineering College, Shijiazhuang, China

PPC-P-2-24 Research of Commutation Thrust Fluctuation and Its Suppression for Linear Permanent Magnet Brushless DC Motor

H. Li

Mechanical Engineering College, Shijiazhuang, Hebei, China

PPC-P-2-25 Analysis of the Enhancement Effect on Shaped Charge Jet by Using External Pulse Magnetic Fields

X. Meng

Mechanical Engineering College, Shijiazhuang, Hebei, China

PPC-P-2-26 Analysis of Influence of the Freewheeling Circuit on the Muzzle Velocity of the Projectile of the Reluctance Launcher

B. Lei

Mechanical Engineering College, Shijiazhuang, Hebei, China

PPC-P-2-27 Pulse Transformer for EM Brushgun

Y. A. Dreizin¹, D. Rebrov¹, A. Recksiedler²

¹*General Electrodynamics International LLC, Long Lake, MN, United States*

²*Department of EE, University Of Minnesota, Minneapolis, MN, United States*

PPC-P-2-28 Controlling the Velocity of Railgun Based on the Multi-Pulse Forming Network

Z. Wang, Z. Bao, F. Liu, L. Jia

Key Lab of Industrial Computer Control Engineering of Hebei Province, Yanshan University, QinHuangDao, China

PPC-P-2-29 The Simulation Study of Fast Charger of Pulse Capacitor

Y. Gao, K. Liu, P. Yan, J. Wang, C. Zhang

Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, Beijing, China

PPC-P-2-30 Influence of the Electrodes Erosion on Arc Dynamics

A. V. Kharlov

Institute of High Current Electronics, TOMSK, Russian Federation

PPC-P-2-31 Research on the Thermal Field of a Compulsator Driving a Coilgun Load

B. Zhu, K. Xiao, L. Kun, H. Wang, J. Feng, Z. Zhang

College of Aerospace Science and Engineering, National University of Defense Technology, Changsha, China

PPC-P-2-32 Effect of Current Pulse Form on Rails Force and Armature Velocity in Railgun Power Source

A. Keshtkar, A. Rabiei, L. Gharib

Electrical department, Electrical Faculty of Imam Khomeini International University (IKIU), Qazvin, Iran, Qazvin, Iran

PPC-P-2-33 Pulsed Current Distribution Characteristics of Electromagnetic Railgun

Q. -A. Lv

Dept. 3rd, Shijiazhuang Mechanical Engineering College, Shijiazhuang, Hebei, China

PPC-P-2-34 Continuous Thrust of Two-Stage Coilgun for Fuze Simulation

C. Zhan

3th department, Mechanical Engineering College, Shijiazhuang, China

PPC-P-2-35 Characterization of a Coaxial-Gun-Produced Magnetized Plasma

Y. Zhang, A. Lynn, M. A. Gilmore

Electrical & Computer Engineering Department, University of New Mexico, Albuquerque, NM, United States

Session PPC-P-3: Generators and PFNs - Poster I

Poster Session

Monday, June 1, 13:30-15:00, Salon H

Session Chair: Mark D Johnston, Sandia National Laboratories

PPC-P-3-36 The Switching Characteristic of BJT Using in Marx Type Pulsed Power Generator and PSPICE Simulation Model

Z. Li, Y. Zhang, J. Rao

School of Optical-Electrical and Computer Engineering, Shanghai, China

PPC-P-3-37 Transmission Properties of Doubly Periodic LC Ladder Networks

J. J. Barroso, A. F. G. Greco, J. Rossi

National Institute for Space Research-INPE, S. Jose dos Campos, SP, Brazil

PPC-P-3-38 Design and Control of a Novel Integrated Permanent Magnet Compulsator Based on Flywheel Energy Storage System

J. Feng, H. Wang, K. Liu, P. Ao, B. Zhu, Z. Zhang

College of Aerospace Science and Engineering, National University of Defense Technology, Changsha, China

PPC-P-3-39 Critical Aspects Designing a High Current Inductor

A. V. Kharlov

Institute of High Current Electronics, TOMSK, Russian Federation

PPC-P-3-40 New Pulsed Power Supply for the Spallation Neutron Source Linac LEPT Chopper System

V. V. Peplov, D. E. Anderson, R. B. Saethre

Oak Ridge National Laboratory (ORNL), Oak Ridge, TN, United States

PPC-P-3-41 5-GW 100-NS Linear-Transformer-Driver Brick

M. L. Wisher¹, R. J. Focia¹, B. S. Stoltzfus¹, W. A. Stygar¹, M. Abdalla², E. W. Breden¹, T. D. Mulville¹, S. Romero²,
M. Skipper²

¹*Sandia National Laboratories, Albuquerque, United States*

²*ASR Corporation, Albuquerque, United States*

PPC-P-3-42 STUDY ON THE IGBTs' DRIVER OF MARX CIRCUIT BY MAGNETIC INSULATION TECHNOLOGY

X. Xu, P. Yan

*Key Laboratory of Power Electronics and Electric Drive, Chinese Academy of Sciences, Beijing 100190, China, Institute of
Electrical Engineering, Chinese Academy of Sciences, Beijing, China*

PPC-P-3-43 High Stability Injection Kickers Pulse Magnet Systems

A. A. Korepanov, A. N. Panov, A. S. Kasaev

Budker Institute of Nuclear Physics, Novosibirsk, Russian Federation

PPC-P-3-44 Computer-Controlled Rs-105 Test System for 1-M Euts

M. B. Lara, J. R. Mayes, C. Nunnally, W. C. Nunnally, J. M. Byman, D. Kohlenberg

Applied Physical Electronics, Spicewood, TX, United States

PPC-P-3-45 Commercially Viable Homopolar Pulsed Power System

R. C. Zowarka, Jr.¹, B. Rech²

¹*University of Texas Center for Electromechanics, Austin, Texas, United States*

²*Koo and Associates, Austin, Texas, United States*

PPC-P-3-46 Numerical Analysis and Experiment of Blumlein-Nonlinear Transmission Line

K. -C. Ko¹, J. -T. Oh¹, J. -H. Rhee¹, C. -J. Lee¹, J. -G. Kim²

¹*Electrical Engineering, Hanyang University, Seoul, South Korea*

²*Electric & Electron Technology Team, Posco ICT, Seoul, South Korea*

PPC-P-3-47 Analysis of Magnetic Switch Core to Improve Reliability of Magnetic Pulse Compressor System

K. -C. Ko¹, J. -T. Oh¹, J. -H. Rhee¹, S. -H. Kim¹, S. -M. Kim²

¹*Electrical Engineering, Hanyang University, Seoul, South Korea*

²*Electric & Electron Technology Team, Posco ICT, Seoul, South Korea*

PPC-P-3-48 Status of a 220kV - 60ns flat top double pulse generator

B. Cadilhon, B. Cassany, R. Pecquois

CEA DAM, Le Barp, France

PPC-P-3-49 Solid State Linear Transformer Driver (LTD) Development for HPM Sources

L. Collier, M. B. Walls, J. Dickens, J. Mankowski, A. Neuber

Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, USA

PPC-P-3-50 A Magnetron Pulsed Modulator for Microwave Plasma Interaction Studies.

R. J. Priyavandana¹, V. P. Anitha¹, G. Veda Prakash¹, Z. H. Sholapurwala²

¹*Institute for Plasma Research, Gandhinagar, Gujarat, India*

²*Zeonics Systech, Bangalore, Karnataka, India*

PPC-P-3-51 Design and Performance of a 50-Kj Pulse Generator

Y. Zhou¹, D. Zhang², Y. Sun², P. Yan²

¹*Tianjin University of Technology and Education, Tianjin, China*

²*Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China*

PPC-P-3-52 Design of a Novel Solid-State Marx Generator Based on Power Mosfet

Y. Zhou¹, D. Zhang², Y. Sun²

¹*Tianjin University of Technology and Education, Tianjin, China*

²*Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China*

Session PPC-P-4: Opening and Closing Switches - Poster

Poster Session

Monday, June 1, 13:30-15:00, Salon H

Session Chair: Michael Giesselmann, Texas Tech University

PPC-P-4-53 2.8MV Low-Inductance Electrical-Triggered Gas Switch for IVA

J. Yin^{1,2}, A. Qiu^{1,2}, F. Sun¹, J. Zeng¹, T. Dang¹, X. Jiang¹, Z. Wang¹

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

²*State Key Laboratory of Intense Pulsed Radiation Simulation and Effect, Northwest Institute of Nuclear Technology, Xi'an, China*

PPC-P-4-54 Influences on Pulsed-Current Transporting Properties of Semiconductor Switch by Its Consumed Energy and Thermal Characters

K. Huang, Z. Dong, R. Ren, H. Zhang, W. Zhou

Northwest Institute of Mechanical and Electrical Engineering, XianYang, China

PPC-P-4-55 An Experimental and Analytical Study of Plasma Closing Switches Filled with Environmentally Friendly Gases.

C. McGarvey¹, I. V. Timoshkin¹, S. J. MacGregor¹, M. P. Wilson¹, M. J. Given¹, M. A. Sinclair²

¹*High Voltage Technologies, University of Strathclyde, Glasgow, United Kingdom*

²*Applied Physics, A.W.E, Aldermaston, United Kingdom*

PPC-P-4-56 Characterization of the Optical and Electronic Properties of GaN:Fe for High Voltage Photoconductive Switch Applications

V. Meyers, D. Mauch, J. Mankowski, J. Dickens, A. Neuber

Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

PPC-P-4-57 Optimization of Multi-Gap Switch for Linear Transformer Driver

L. Zhou, M. Wang

Institute of Fluid Physics, CAEP, Mianyang, Sichuan, China

PPC-P-4-58 The Influences of the Luminous Environment Caused by LEDs on Outputs Characteristics in GaAs PCSS

X. Zhu, T. Zhang, J. Qiu, K. Liu

Fudan University, Shanghai, China

PPC-P-4-59 A 2D Finite Difference Simulation to Investigate the High Voltage Blocking Characteristics of 4H-SiC Photoconductive Semiconductor Switches

J. L. Shaver, D. Mauch, R. Joshi, J. J. Mankowski, A. Neuber

Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

PPC-P-4-60 Performances of Different Nanosecond Pulse Generator Designs Based on Avalanche Transistors

X. Le^{1,2}, T. Akira^{1,3}, J. Weihua¹

¹*Extreme Energy-Density Research Institute, Nagaoka University of Technology, Nagaoka, Niigata, Japan*

²*Institute of Fluid Physics, CAEP, Mianyang, Sichuan, China*

³*Pulsed Power Japan Laboratory Ltd., Kusatsu, Japan*

PPC-P-4-61 Operational Experience of the 50 kA-35kV RFX-Mod Dc-Current Interruption System

A. Zamengo

Consorzio RFX (CNR, ENEA, INFN, Università di Padova, Acciaierie Venete SpA), Padova, Italy

PPC-P-4-62 Life Time of the HCEI Spark Gap Switches for Linear Transformer Drivers

A. A. Kim^{1,2}, V. A. Sinebryukhov¹, S. N. Volkov¹, V. M. Alexeenko¹, S. S. Kondratiev¹, S. V. Vasiliev¹, M. G. Mazarakis³

¹*Institute of High Current Electronics, Tomsk, Russian Federation*

²*National Research Tomsk Polytechnic University, Tomsk, Russian Federation*

³*Sandia National Laboratories, Albuquerque, NM, USA*

PPC-P-4-63 Super-Critical and High-Pressure Media for High-Repetition Rate Plasma Switching

E. J. van Heesch¹, J. Zhang¹, F. J. Beckers¹, T. Huiskamp¹, W. F. Hoeben¹, E. M. van Veldhuizen¹, A. J. Pemen¹,

A. H. Markosyan², U. Ebert²

¹*Eindhoven University of Technology, Eindhoven, Netherlands*

²*Centrum voor Wiskunde en Informatica, Amsterdam, Netherlands*

PPC-P-4-64 A Laser Triggered Switch Test-Bed for Gaseous Discharge Initiation Studies

M. T. Domonkos¹, N. P. Lockwood¹, A. Schmitt-Sody¹, E. L. Ruden¹, D. J. Brown², J. F. Camacho², A. Lucero³

¹*Directed Energy Directorate, AFRL, Kirtland AFB, NM, United States*

²*Leidos, Inc., Albuquerque, NM, United States*

³*Boeing, Albuquerque, NM, United States*

PPC-P-4-65 A Spark Gap Model for LTSPICE and Similar Circuit Simulation Software

J. C. Pouncey¹, J. M. Lehr¹, R. K. Howard², M. Caldwell²

¹*University of New Mexico, Albuquerque, NM, United States*

²*Sandia National Laboratories, Albuquerque, NM, United States*

PPC-P-4-66 Feasibility of Photoconductive Semiconductor Switches (PCSS) in Pulsed Power Systems as an Enabling Technology

J. C. Petrosky¹, T. Wolfe¹, A. Francis¹, D. Langley¹, S. Nickolas¹, J. Cetnar², E. Moore², R. Burchett², T. Zez²

¹*Engineering Physics, Air Force Institute of Technology, WPAFB, United States*

²*Institute of Electrical and Electronics Engineers (IEEE), Dayton, United States*

Session PPC-P-5: Repetitive Pulsed Power - Poster

Poster Session

Monday, June 1, 13:30-15:00, Salon H

Session Chair: Matt Martin, UT Arlington

PPC-P-5-67 Repetitive Square Pulse Stimulated Magnetic Core Test Stand for Fe-Based Amorphous and Nanocrystalline Materials

S. Li, J. M. Gao, H. W. Yang, B. L. Qian

College of Optoelectric Science and Engineering, National University of Defense Technology, Changsha, China

PPC-P-5-68 Implementaion of Magnetic Pulse Compressor with Protect Circuit

S. -M. Kim

R&D Center, POSCO ICT, Seoul, South Korea

PPC-P-5-69 270 kV, 6 kA Repetitively Pulsed Electron Beam Diode with a Conical Z-Stack

F. Hegeler, M. C. Myers, M. F. Wolford, J. D. Sethian

Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

PPC-P-5-70 High Voltage Nanosecond Pulser Operating at 100 kHz Pulse Repetition Frequency

T. Ziemba, J. Prager, K. E. Miller

Eagle Harbor Technologies, Inc., Seattle, United States

PPC-P-5-71 A Repetitive 800kA Linear Transformer Drivers Stage for Z-Pinch Driven Fusion-Fission Hybrid Reactor
C. Liang

Institute of Nuclear Physics and Chemistry, Miangyang, Sichuan, China

Session PPC-P-6: Pulsed Power for Lasers - Poster

Poster Session

Monday, June 1, 13:30-15:00, Salon H

Session Chair: Phil Arnold, Lawrence Livermore National Laboratory

PPC-P-6-72 Pulsed Power System for the HAPLS Diode Pumped Laser System

E. S. Fulkerson, S. J. Telford

LSEO/NESD, Lawrence Livermore National Laboratory, Livermore, CA, United States

PPC-P-6-73 Versatile Power Generator for the Parametric Study of DBD Excimer Lamps Supply and Its Optimization

R. Diez¹, H. Piquet², D. Florez¹, A. Wiesner¹

¹*Dept. of Electronics, Pontificia Universidad Javeriana, Bogota, Colombia*

²*Université de Toulouse; INPT, UPS, CNRS; LAPLACE laboratory, Toulouse, France*

PPC-P-6-74 High Efficiency and Reliability Pulsed Power System for Medical Lasers with the Digital Controller

V. -L. Tran, T. Park, H. Choi, J. Choi

R&D Division, Lutronic Corporation, Seoul, South Korea

PPC-P-6-75 A High Power Pulse Constant Current Power Supply for Laser Diode Array

K. Gan

Institute of the Applied Electronics, China Academy of Engineering Physics, Mianyang, China

PPC-P-6-76 Cairns-Gurevich Equation for Soliton in Plasma Expansion

K. Annou, D. Bara, D. Bennaceur-Doumaz

MIL, USTHB, Baba Hassen, Algeria

Session PPC-O-4: HPM Devices I

Monday, June 1, 15:00-17:30, Salon G

Session Chair: Andrey D Andreev, Raytheon Missile Systems

15:00 PPC-O-4-1 Overview of Rf Generation Using Nonlinear Transmission Lines

J. O. Rossi¹, L. P. Silva¹, J. J. Barroso¹, F. S. Yamasaki², E. Schamiloglu²

¹*Associated Plasma Laboratory, National Institute for Space Research - INPE, Sao Jose dos Campos, Brazil*

²*ECE Department, University of New Mexico, Albuquerque, USA*

15:15 PPC-O-4-2 SYSTEM INTEGRATION OF A COAXIAL FERRIMAGNETIC NONLINEAR TRANSMISSION LINE ARRAY

R. S. Garcia, D. V. Reale, J. M. Johnson, W. H. Cravey, A. A. Neuber, J. C. Dickens, J. J. Mankowski

Center for Pulsed Power and Power Electronics Dept. of Electrical and Computer Engineering, Texas Tech University, Lubbock,

Tx, United States

15:30 PPC-O-4-3 1 KHZ REP-RATE OPERATION OF A SPARK-GAP SWITCHED GYROMAGNETIC NONLINEAR TRANSMISSION LINE ARRAY

J. M. Johnson, D. V. Reale, D. H. Barnett, R. S. Garcia, W. H. Cravey, J. M. Parson, A. A. Neuber, J. C. Dickens,

J. J. Mankowski

Center for Pulsed Power and Power Electronics Dept. of Electrical and Computer Engineering, Texas Tech University, Lubbock,

Tx, United States

15:45 PPC-O-4-4 (invited) Refurbishment and Target Testing with the ORION System at NSWC Dahlgren

J. Krile, J. Walker, J. Chaparro

Directed Energy Division, Naval Surface Warfare Center, Dahlgren Division, Dahlgren, VA, United States

16:15 PPC-O-4-5 Performance of a Stripline Based Gyromagnetic Nonlinear Transmission Line

D. V. Reale, J. M. Parson, A. A. Neuber, J. C. Dickens, J. J. Mankowski

Center for Pulsed Power & Power Electronics, Texas Tech University, Lubbock, TX, United States

16:30 PPC-O-4-6 Spice Simulations of Nonlinear Gyromagnetic Lines

F. S. Yamasaki¹, E. Schamiloglu¹, J. O. Rossi², J. J. Barroso²

¹*Electrical & Computer Engineering, University of New Mexico, Albuquerque, United States*

²*Associated Plasma Laboratory, National Institute for Space Research, Sao Jose dos Campos, Brazil*

16:45 PPC-O-4-7 Designs and Experiments of a Novel Disc-cone-shaped Antenna with a High Ultra Wide-Band Gain for High-Power Wideband Application

Q. Li¹, W. Cao², P. He³, D. Jiang¹, C. Zhao¹

¹*Microwave, Research institute of Xi'an Electric Engineering, Xi'an, Shaanxi 710100, P. R. China*

²*School of Electronics and Information Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi 710049, P. R. China*

³*Xi'an Jiaotong University, Xi'an, Shaanxi 710049, P. R. China*

17:00 PPC-O-4-8 Tunable Electrically Small Antenna at 45 to 100 MHz

B. Esser, S. Beeson, J. Mankowski, J. Dickens, A. Neuber

Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

17:15 PPC-O-4-9 Design and Simulation of a Giga-Watt Class Relativistic Inverted Magnetron

T. P. Fleming, P. J. Mardahl, M. Lambrecht

Directed Energy Directorate, Air Force Research Lab, Kirtland AFB, NM, United States

Session PPC-O-5: Compact and Explosive Pulsed Power - In honor of Larry Altgilbers

Monday, June 1, 15:00-17:35, Salon F

Session Chair: David Goerz, Lawrence Livermore National Laboratory

15:00 PPC-O-5-1 In Memoriam of Larry Altgilbers

D. Goerz

Lawrence Livermore National Laboratory, Livermore, CA, USA

15:20 PPC-O-5-2 Additional Pulse Compression and Modulation of the Output of a 0.6 MV, 10 GW Tesla-Blumlein Generator

M. Wang¹, B. M. Novac¹, L. Pecastaing², P. Senior¹, I. Smith¹

¹*School of Electronic, Electrical and Systems Engineering, Loughborough University, Loughborough, United Kingdom*

²*SIAME, Pau University, Pau, France*

15:35 PPC-O-5-3 Characterization of High Energy Density Composite-Based Capacitors under Pulsed Conditions

N. D. Kallas, R. D. Curry, A. B. Howard, K. A. O'Connor

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

15:50 PPC-O-5-4 Development of Pulse Output Control of Ltd by Using Fpga (smart Pulsed Power)

M. R. S. Ghurbanali¹, T. Sugai¹, A. Tokuchi^{1,2}, W. Jiang¹

¹*Extreme Energy-Density Research Institute, Nagaoka University of Technology, Nagaoka, Japan*

²*Japan Pulsed Power Laboratory, Kusatsu, Japan*

16:05 PPC-O-5-5 Investigating the Performance Limitations of Imploding Coaxial Magnetic Flux Compression Generators

A. J. Young, A. D. White, J. B. Javedani, M. C. Converse

Lawrence Livermore National Laboratory, Livermore, CA, United States

16:20 PPC-O-5-6 High Voltage Generation with Shock Compressed Ferroelectrics: Thickness Dependent Law for Breakdown Field

S. I. Shkuratov¹, J. Baird¹, V. G. Antipov¹, E. F. Talantsev²

¹*Loki Incorporated, Rolla, MO, United States*

²*Pulsed Power LLC, Lubbock, TX, United States*

16:35 PPC-O-5-7 Improvements in Rancho Magnetic Flux Compression Generators

J. H. Goforth, T. A. Gianakon, B. B. Glover, D. H. Herrera, R. L. Holmes, J. L. Johnson, E. C. Martinez, R. K. Meyer, H. Oona, P. J. Rae, C. L. Rousculp, R. G. Watt

Los Alamos National Laboratory, Los Alamos, NM, United States

16:50 PPC-O-5-8 Refurbishment of the Ancho Canyon Point 88 Firing Site: a Collaborative Effort Between Lawrence Livermore and Los Alamos National Laboratories to Establish the Premier High Explosive Pulsed Power Experimental Facility

A. J. Young¹, A. D. White¹, C. S. Anderson¹, D. P. Milhous¹, R. D. Speer¹, A. J. Ferreira¹, R. M. Kuklo¹, R. A. Anderson¹, E. V. Baluyot¹, A. D. Wiltse¹, C. K. Black¹, G. R. Mease¹, R. K. Hicks¹, J. G. Goforth², D. H. Herrera², P. L. Rae², P. Dickson²

¹*Lawrence Livermore National Laboratory, Livermore, CA, United States*

²*Los Alamos National Laboratory, Los Alamos, NM, United States*

17:05 PPC-O-5-9 Ultra Compact High Power Primary Energy Source

D. Chen, J. Zhang, Y. Wang, D. Li, S. Cao, C. Liu

College of Optoelectronic Science and Engineering, National University of Defense Technology, Changsha, China

17:20 PPC-O-5-10 Development and Properties of a 500kj Pulsed Power Supply

Z. Li, Y. Zhang, J. Wu, Y. Jin, B. Li

National Key Laboratory of Transient Physics, Nanjing University of Science and Technology, NanJing, China

Session PPC-O-6: Transmission Lines and Transformers

Monday, June 1, 15:00-17:30, 615 AB

Session Chair: Jose O Rossi, National Institute for Space Research - INPE

15:00 PPC-O-6-1 Transmission Line Losses on Cygnus X-Ray Machine

M. K. Misch, T. Meehan

Nstec, Las Vegas, Nevada, United States

15:15 PPC-O-6-2 (invited) Millimeter-Gap Magnetically Insulated Transmission Line Power Flow Experiments

B. Hutzel, B. Stoltzfus, E. Breden, W. Fowler, P. Jones, D. Justus, F. Long, D. Lucero, K. MacRunnels, M. Mazarakis,

J. McKenney, J. Moore, T. Mulville, J. Porter, M. Savage, W. Stygar

Sandia National Laboratories, Albuquerque, NM, United States

15:45 PPC-O-6-3 Space Harmonic Fields Surrounding a Tesla Transformer

R. M. Craven, I. R. Smith, B. M. Novac

School of Electronic, Electrical and Systems Engineering, Loughborough University, Loughborough, United Kingdom

16:00 PPC-O-6-4 Dispersionless Charge Transfer on Lumped-Element Transmission Lines Synthesized via Resonant Frequency Assignment

C. J. Buchenauer

Department of Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, United States

16:15 PPC-O-6-5 Pulse Generator Based on Dual Transformer Module

O. G. Egorov

Atomic energy agency, TRINITI, Moscow, Troitsk, Russian Federation

16:30 PPC-O-6-6 Skin Effect with Pulse Magnetization of Strap Toroid Magnetic Core

B. E. Fridman, D. G. Scherbakov

STC "SINTEZ", D.V. Efremov Scientific Research Institute of Electrophysical Apparatus, St.-Petersburg, Russian Federation

16:45 PPC-O-6-7 EXPERIMENTAL RESEARCH ON THE TRANSMISSION CHARACTERISTIC OF MONOLITHIC RADIAL TRANSMISSION LINES

C. Mao, X. Zou, X. Wang

Department of Electrical Engineering, Tsinghua University, Beijing, China

17:00 PPC-O-6-8 Compact Megavolt Pulse Transformer with Inner Cylindrical Magnetic Core and Conical Secondary Windings

Z. Zhang, H. Yang, C. Liu, J. Yang, D. Chen, J. Zhang, H. Zhong

College of Opto-electronic Science and Engineering, National University of Defense Technology, Changsha, China

17:15 PPC-O-6-9 High Power Rf Generation in Nonlinear Lumped Transmission Lines Using Commercial Ceramic Capacitors as Nonlinear Elements

L. P. Silva Neto, J. O. Rossi, J. J. Barroso

Associated Plasma Laboratory, National Institute for Space Research, SJ Campos, SP, Brazil

Session PPC-PLEN-2: Tuesday Plenary - MARX Award Winner

Tuesday, June 2, 08:00-09:15, Salon F

Session Chair: Ian McNab, EMRG Solutions

8:00 PPC-PLEN-2-1 NEXT-GENERATION PULSED-POWER ACCELERATORS FOR HIGH-ENERGY-DENSITY-PHYSICS EXPERIMENTS

W. Stygar¹, T. Awe¹, J. Bailey¹, N. Bennett², E. Breden¹, M. Campbell¹, R. Clark³, R. Cooper⁴, M. Cuneo¹, D. Fehl¹, T. Genoni³, M. Gomez¹, F. Gruner⁵, M. Herrmann⁶, B. Huttsel¹, C. Jennings¹, D. Jobe⁷, B. Jones¹, M. Jones¹, P. Jones¹, P. Knapp¹, J. Lash¹, K. LeChien⁷, J. Leckbee¹, R. Leeper⁸, S. Lewis¹, F. Long¹, D. Lucero¹, E. Madrid³, M. Martin¹, K. Matzen¹, M. Mazarakis¹, R. McBride¹, R. McKee¹, C. Miller³, J. Moore¹, C. Mostrom³, T. Mulville¹, K. Peterson¹, J. Porter¹, D. Reisman¹, G. A. Rochau¹, G. E. Rochau¹, D. Rose³, M. Savage¹, M. Sceiford¹, P. Schmit¹, R. Schneider⁷, J. Schwarz¹, A. Sefkow¹, D. Sinars¹, S. Slutz¹, R. Speilman⁹, B. Stolfus¹, C. Thona³, R. Vesey¹, P. Wakeland¹, D. Welch³, M. Wisher¹, J. R. Woodworth¹

¹*Pulsed Power, Sandia National Laboratories, Albuquerque, NM, USA*

²*Pulsed Power, NsTech, Las Vegas, NV, USA*

³*Pulsed Power, Voss Scientific, Albuquerque, NM, USA*

⁴*Pulsed Power, General Atomic, San Diego, CA, USA*

⁵*Pulsed Power, Kinetech, Cedar Crest, NM, USA*

⁶*Pulsed Power, LLNL, Livermore, CA, USA*

⁷*Pulsed Power, NNSA, Washington, DC, USA*

⁸*Pulsed Power, LANL, Los Alamos, NM, USA*

⁹*Pulsed Power, Idaho State University, Pocatello, ID, USA*

Session PPC-O-7: HPM Devices II

Tuesday, June 2, 09:45-12:15, Salon G

Session Chair: Sarita Devi Prasad, University of New Mexico

9:45 PPC-O-7-1 Compact Reflex Triode Operation of a Carbon Fiber Cathode at 10 Hz Repetition Rate and Long Pulse Widths

E. Rocha, C. F. Lynn, J. M. Parson, J. C. Dickens, A. A. Neuber, J. J. Mankowski

Pulsed Power and Power Electronics, Texas Tech University, Lubbock, Texas, United States

10:00 PPC-O-7-2 COMPARISON of CARBON FIBER CATHODE GEOMETRIES for USE in a FREQUENCY TUNABLE REFLEX TRIODE VIRCATOR at PRFs up to 500 HZ

C. F. Lynn¹, J. M. Parson¹, S. L. Holt¹, D. H. Barnett¹, P. M. Kelly¹, J. C. Dickens¹, A. A. Neuber¹, J. J. Mankowski¹, S. E. Calico², M. C. Scott²

¹*Texas Tech University P3E, Lubbock, Tx, United States*

²*Lockheed Martin Missiles and Fire Control, Grand Prairie, Tx, United States*

10:15 PPC-O-7-3 Compact A6 Magnetron with Axially Extracted Te11 Mode

J. W. McConaha, S. Prasad, M. Fuks, E. Schamiloglu

Department of Electrical and Computer Engineering, University of New Mexico, The University of New Mexico, Albuquerque, NM, United States

10:30 PPC-O-7-4 (invited) An S-Band TE111 Resonator Based Triggered RF Switch

S. Beeson, A. Neuber

Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States

11:00 PPC-O-7-5 Experimental Studies of a Relativistic Backward Wave Oscillator with Bragg Reflector

A. Elfrgani, S. Prasad, M. Fuks, E. Schamiloglu

Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, United States

11:15 PPC-O-7-6 Innovative Recirculating Planar Magnetron Experiments

S. C. Exelby, G. B. Greening, N. M. Jordan, D. Simon, P. Zhang, Y. Y. Lau, R. M. Gilgenbach

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

11:30 PPC-O-7-7 A Six Vane, Single Radial Output Slot Relativistic Magnetron Revisited

J. G. Leopold, A. Shlapakovski, Y. E. Krasik

Physics Department, Technion, Haifa, Israel

11:45 PPC-O-7-8 Repetitive Operation of a MW-Class Reflex-Triode Vircator

J. M. Parson¹, C. C. Lynn¹, S. L. Holt¹, D. B. Barnett¹, P. M. Kelly¹, M. C. Scott², S. E. Calico², J. C. Dickens¹, A. A. Neuber¹,

J. J. Mankowski¹

¹*Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States*

²*Missiles and Fire Control, Lockheed Martin, Grand Prairie, TX, United States*

12:00 PPC-O-7-9 Simulation of Compact High Power Antenna Concepts Loaded by Double-Positive Metamaterials

K. A. O'Connor, R. D. Curry

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

Session PPC-O-8: Medical, Biological, Environmental, & Industrial Applications II

Tuesday, June 2, 09:45-12:15, Salon F

Session Chair: Bucur Novac, Loughborough University

9:45 PPC-O-8-1 Characterization of an 7kJ Magnetizing Pulsed Circuit for Online Quality Control of Permanent Magnets

C. Dinca¹, E. Ramezani², Y. Cat¹, P. Korneluk¹, D. Schwarzer¹, U. SchÄmfer¹

¹*Electric Drives, Technische UniversitÄt Berlin, Berlin, Germany*

²*Astrol Electronic AG, Othmarsingen, Switzerland*

10:00 PPC-O-8-2 Implications of Pulsar Design and Pulse Parameters on Platelet Activation

A. L. Garner¹, J. J. Maciejewski¹, A. S. Torres², A. Caiafa², V. B. Neculaes²

¹*Nuclear Engineering, Purdue University, West Lafayette, IN, United States*

²*GE Global Research, Niskayuna, NY, United States*

10:15 PPC-O-8-3 Effect of Feed Gas Flow Path on Ozone Generation Characteristic Using Nanosecond Pulsed Discharge

Y. Yamato¹, N. Abe¹, D. Wang², T. Namihira², H. Akiyama²

¹*Graduate School of Science and Technology, Kumamoto university, Kurokami 2-39-1, Kumamoto city, Japan*

²*Institute of Pulsed Power Science, Kumamoto University, Kurokami 2-39-1, Kumamoto city, Japan*

10:30 PPC-O-8-4 Air Purification with Subnanosecond Pulsed Streamer Plasma: High Yield Ozone Production, NO Conversion and CO₂ Conversion

T. Huiskamp, W. F. L. M. Hoeben, V. R. Chirumamilla, E. J. M. van Heesch, A. J. M. Pemen

Electrical Engineering, Electrical Energy Systems, Eindhoven University of Technology, Eindhoven, The Netherlands

10:45 PPC-O-8-5 Experimental Study on the Killing Effect of the Irreversible Electroporation in Different Frequencies

Y. Zhao

school of the electrical engineering, Chongqing University, Chongqing, China

11:00 PPC-O-8-6 Treatment of Frack Water Using Shock Waves Produced by Nanosecond Pulsed Discharges

L. Morgan¹, L. Rosocha²

¹*Kinema Research, Monument, CO, United States*

²*Applied Physics Consulting, Los Alamos, NM, United States*

11:15 PPC-O-8-7 Dielectric Barrier Plasma Reactors for Plasma Chemistry: a "natural" Pulsed PowerDriver

M. V. Pachuiol¹, L. A. Rosocha^{1,2}, F. Stefani¹, L. L. Raja¹

¹*Aerospace Engineering and Engineering Mechanics, The University of Texas at Austin, Austin, TX, United States*

²*Applied Physics Consulting, Los Alamos, NM, United States*

11:30 PPC-O-8-8 Dielectric Investigation of Normal and Malignant Cells Exposed to Nanosecond Pulsed Electric Field

J. Zhuang, A. Steuer, J. F. Kolb

Leibniz-Institute for Plasma Science and Technology, Greifswald, Germany

11:45 PPC-O-8-9 Pulsed Filament Current Characteristics in Dielectric Barrier Discharge

Y. J. Zhou, T. Wang, S. Macgregor, I. Timoshkin, M. Given, M. Wilson

University of Strathclyde, Glasgow, United Kingdom

12:00 PPC-O-8-10 Hydrogen Production from Water by Using Hybrid Gas-Liquid Nanosecond Pulsed Discharge

T. Ihara, H. Nagata, Y. Yagyu, T. Ohshima, H. Kawasaki

National Institute of Technology, Sasebo College, Sasebo, Nagasaki, Japan

Session PPC-O-9: High Energy Accelerators

Tuesday, June 2, 09:45-12:15, 615 AB

Session Chair: Craig Burkhardt, SLAC

9:45 PPC-O-9-1 Screamer V4.0: a Powerful Circuit Analysis Code

R. B. Spielman, Y. Gryazin

Physics, Idaho State University, Pocatello, ID, United States

10:00 PPC-O-9-2 (invited) Reestablishing the Double Pulse Capability in the LLNL Flash X-Ray (FXR) Linear Induction Accelerator

A. J. Young, B. R. Kreitzer, J. L. Ellsworth, J. M. Zentler

Lawrence Livermore National Laboratory, Livermore, CA, United States

10:30 PPC-O-9-3 DARHT Axis-I Injector Insulator Design Modification

T. McCuistian, C. R. Rose, R. Mitchell, J. Barraza

LANL, Los Alamos, NM, United States

10:45 PPC-O-9-4 AWA RF Modulator Upgrade Using Solid State Thyatron Replacement

W. Liu¹, J. Power¹, M. Conde¹, W. Gai¹, H. Sanders²

¹*High Energy Physics, Argonne National Laboratory, Argonne, IL, United States*

²*Applied Pulsed Power, Inc., Freeville, NY, United States*

11:00 PPC-O-9-5 Modeling Electron Beam Generation and Transport in the FXR Linear Induction Accelerator for Double Pulse Operation

J. L. Ellsworth, B. R. Poole, Y. -J. Chen, T. L. Houck

Lawrence Livermore National Laboratory, Livermore, CA, United States

11:15 PPC-O-9-6 DUAL PULSE INVESTIGATION WITH THE CEA 1 MV LTD

M. Toury, R. Maisonnay, S. Lacoste, F. Cartier, T. D'Almeida, D. Plouhinec, G. Auriel, M. Caron

CEA, Gramat, France

11:30 PPC-O-9-7 An Investigation of a Pulsed Discrete Element Transmission Line Magnet System for the LCLS-II Beam Spreader

T. Tang, T. Beukers

SLAC National Accelerator Laboratory, Menlo Park, CA, United States

11:45 PPC-O-9-8 Pulsed Power Supplies for NSLS-II Booster Ring Kicker Magnets

A. Akimov¹, A. Korepanov¹, O. Anchugov¹, P. Bak¹, S. Gurov¹, A. Pachkov¹, A. Panov¹, D. Shvedov¹, D. Durfee², T. Shaftan², B. Singh², P. Zuhoski²

¹*Budker Institute of Nuclear Physics, Novosibirsk, Russian Federation*

²*Brookhaven National Lab., Upton, NY, USA*

12:00 PPC-O-9-9 Numerical Simulation of Free Surface Behavior in windowless Spallation Target of ADS

D. Cheng

Army officers academy, hefei, China

Session PPC-P-7: Medical, Biological, Environmental, & Industrial Applications - Poster II

Poster Session

Tuesday, June 2, 13:30-15:00, Salon H

Session Chair: Clint Gnegy-Davidson, UT Arlington

PPC-P-7-1 Irreversible Changes of Vacuum Circuit Breakers Dielectric Strength as a Result of Current Breaking Operations

R. Todorovic^{1,2}, Z. Bajramovic³, U. Kovacevic¹, K. Stankovic¹, R. Maric²

¹Faculty of Electrical Engineering, University of Belgrade, Serbia, Yugoslavia

²Electric Power Industry of Serbia, ED Beograd, Serbia, Yugoslavia

³Faculty of Electrical Engineering, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

PPC-P-7-2 Microbubbles Generated by Underwater Piezotransducer

M. Alkhalil¹, C. Zhou¹, M. Cho², S. Xiao¹

¹Department of Electrical and Computer Engineering / Frank Reidy Research Center for Bioelectronics, Old Dominion University, Norfolk, United States

²Department of Bioengineering, University of Illinois, Chicago, IL, United States

PPC-P-7-3 Study of Rock Fracturing Generated by Pulse Discharging under Confining Pressure

Y. Sun, R. Fu, Y. Gao, P. Yan

Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China

PPC-P-7-4 The Influence of Electrical Parameters on the Dynamic Pressure Wave in Water

Y. Han

State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, Hubei, China

PPC-P-7-5 Experimental Study on Inhibit Effects of Physiological Characteristics in HeLa Cells with Intense Picosecond Pulsed Electric Fields

Y. Wu, R. Zhang

Chongqing Medical University, Chongqing, China

PPC-P-7-6 Immediate Response of Mammalian Cells to Applied Pulsed High Electric Field

R. Matsushima¹, M. Ota¹, K. Mitsutake², S. H. R. Hosseini³, S. Katsuki³, H. Akiyama³

¹Graduate School of Science and Technology, Kumamoto University, Kumamoto, Kumamoto, Japan

²Department of Molecular Medicine Faculty of Life Sciences, Kumamoto University, Kumamoto, Kumamoto, Japan

³Institute of Pulsed Power Science, Kumamoto University, Kumamoto, Kumamoto, Japan

PPC-P-7-7 Effects on Endoplasmic Reticulum Stress Response of Applying Nanosecond Pulsed Electric Fields

H. Fukuda¹, M. Miyake², H. Hirai¹, K. Teranishi³, N. Shimomura³, S. Oyadomari²

¹Graduate School of Advanced Technology, Tokushima University, Tokushima, Japan

²Institute for Genome Research, Tokushima University, Tokushima, Japan

³Institute of Technology and Science, Tokushima University, Tokushima, Japan

PPC-P-7-8 INVESTIGATION OF EFFECT OF APPLIED NANOSECOND PULSED ELECTRIC FIELDS ON TUMOR

S. Matsubara¹, A. Nakagawa¹, K. Shouta¹, K. Teranishi², Y. Uto², N. Shimomura²

¹Graduate School of Advanced Technology, Tokushima University, Tokushima, Japan

²Institute of Technology and Science, Tokushima University, Tokushima, Japan

PPC-P-7-9 New Efficient High Power Microwave Applicators Enabling Optimal E Field Coupling and Homogeneity into Biological Samples

T. Chretiennot¹, A. Catrain¹, R. V. Vezinet¹, L. Gibot², F. Pillet², M. -P. Rols²

¹CEA GRAMAT, CEA DAM, GRAMAT, FRANCE

²IPBS, CNRS, TOULOUSE, FRANCE

PPC-P-7-10 Numerical Simulations of Pulsed Power Electronic Components Radiation Hardness

M. D. Obrenovic

School of Electrical Engineering, Belgrade, Yugoslavia

PPC-P-7-11 Finite Element Analysis of Tissue Heating During High-Frequency Nanosecond Electroporation

S. Rui, Y. Mi, J. Xu, Y. Zhao, R. Zhang, C. Yao, C. Li

Chongqing University, Chongqing, China

PPC-P-7-12 Effective Extraction of the Yeast-Derived Lactase by High-Voltage Pulsed Electric Field

T. Abe¹, S. Yamazaki¹, Y. Minamitani¹, T. Sugiura²

¹*Graduate School of Science and Engineering, Yamagata University, Yonezawa, Japan*

²*Ngoya Plant, Amano Enzyme Inc., Kitanagoya, Japan*

PPC-P-7-13 Transition of Gas Discharge in Contact with Surface of a Liquid Electrode to Streamer Discharge in Liquid Volume

P. Hoffer, P. Lukes

Institute of Plasma Physics AS CR, v.v.i., Prague, Czech Republic

PPC-P-7-14 High-Speed Microscopy Testing a "Progressive Melting" Model for Magnetic Sawing

E. Trevino¹, F. Stefani², A. J. Sitzman³, D. L. Bourell⁴

¹*Natural Sciences, University of Texas at Austin, Austin, Texas, United States*

²*Center for Aeromechanics Research, University of Texas at Austin, Austin, Texas, United States*

³*MagnetoSpeed LLC, Austin, Texas, United States*

⁴*Department of Mechanical Engineering, University of Texas at Austin, Austin, Texas, United States*

PPC-P-7-15 Nanosecond Pulsed Driven Discharges in Liquids for Surface Modifications of Polyimide Films

C. Miron¹, J. F. Kolb¹, J. Zhuang¹, I. Sava², C. Hulubei²

¹*INP Greifswald, Greifswald, Germany*

²*Institute of Macromolecular Chemistry "Petru Poni" , Jassy, Romania*

PPC-P-7-16 Optimization of Shock Intensities Generated by High Current Exploding Wires

C. Hicks¹, J. Stephens¹, J. Dickens¹, A. Neuber¹, W. Carey², O. Bergen²

¹*Electrical and Computer Engineering, Pulsed Power and Power Electronics Lab, Lubbock, TX, United States*

²*ARC Technology, Whitewater, KS, United States*

PPC-P-7-17 Estimation of Development of Pulse Creeping Discharge over Water Solution

D. Ichikawa, H. Koreeda, T. Furusato, T. Fujishima, T. Yamashita

Graduate School of Engineering, Nagasaki University, Nagasaki City, Nagasaki Prefecture, Japan

PPC-P-7-18 Asymmetric Conduction in Biological Nanopores: Model Based Inference of Membrane Charge

R. P. Joshi¹, H. Qiu²

¹*Electrical & Comp. Engineering, Texas Tech University, Lubbock, TX, United States*

²*Electrical Engineering, Fort Valley State University, Fort Valley, GA, United States*

PPC-P-7-19 Simulation Studies on the Inhibit Effects of Nanosecond Pulse Delivered to Nervous Cells

H. Liu, R. Zhang

Chongqing University, Chongqing, China

Session PPC-P-8: Dielectric Breakdown - Poster

Poster Session

Tuesday, June 2, 13:30-15:00, Salon H

Session Chair: Isaac Cohen, UT Arlington

PPC-P-8-20 Characteristics of Gaseous DC Breakdown in Dielectric-Loaded Systems

M. T. P. Aldan¹, J. P. Verboncoeur²

¹*Nuclear Engineering, University of California at Berkeley, Berkeley, CA, United States*

²*Electrical and Computer Engineering, Michigan State University, East Lansing, MI, United States*

PPC-P-8-21 Dielectric Strength Testing of 3D Printed Plastics

B. W. Hoff, D. M. French, S. S. Maestas, J. O'Loughlin

Air Force Research Laboratory, Kirtland AFB, NM, United States

PPC-P-8-22 Gassing of Aromatic Hydrocarbon Effect on Breakdown Strength for Propylene Carbonate in Microsecond Regime

Z. Wang, Z. Zhang, Z. Zhang

College of Optoelectronic Science and Engineering, National University of Defense Technology, Changsha, China

PPC-P-8-23 Fundamental Investigation of Microsecond Breakdown near a High Permittivity Dielectric

S. Feathers, A. Fierro, S. Beeson, J. Stephens, A. Neuber

Texas Tech University, Lubbock, United States

PPC-P-8-24 Electrical Breakdown Time Delay in Commercial Gas-Filled Surge Arresters

M. M. Pejovic¹, S. Djekic², B. Jovanovic³, I. Fetahovic⁴, P. Osmokrovic⁴

¹*Faculty of Electronic Engineering, University of Nis, Serbia, Yugoslavia*

²*ElektroDoboj, Electric Power Industry of Republika Srpska, Republika Srpska, Bosnia and Herzegovina*

³*High School of Technical Sciences Zvečan, Serbia, Yugoslavia*

⁴*State University of Novi Pazar, Serbia, Yugoslavia*

PPC-P-8-25 Violating the Free-Electrons Gas Spectrum of Noble Gases by Adding the Electropositive and Electronegative Gases

L. Perazic¹, K. Stankovic¹, C. Belic¹, M. Alimpijevic¹, I. Fetahovic²

¹*Faculty of Electrical Engineering, University of Belgrade, Serbia, Yugoslavia*

²*State University of Novi Pazar, Serbia, Yugoslavia*

PPC-P-8-26 Characteristics Optimization of Gas-Filled Surge Arresters by Using Gas Mixtures

K. Stankovic¹, M. Alimpijevic¹, U. Kovacevic¹, D. Brajovic², E. Dolicanin³

¹*Faculty of Electrical Engineering, University of Belgrade, Serbia, Yugoslavia*

²*High School of Technical Sciences Cacak, Serbia, Yugoslavia*

³*State University of Novi Pazar, Serbia, Yugoslavia*

PPC-P-8-27 Electrical Breakdown Study of Water under Nano Second Pulsed Conditions Using Optical Diagnostics

G. Veda Prakash, R. Kumar, S. Kumar, A. Shyam

Institute for Plasma Research, Gandhinagar, Gujarat, India

PPC-P-8-28 Study on Pulsed Breakdown Characteristics in High Pressurized Nitrogen Gas Including Supercritical State

Y. Iwasaki, T. Ishikawa, T. Kiyam

Faculty of Humanity-Oriented Science and Engineering, Kinki University, Fukuoka, Japan

PPC-P-8-29 Investigation of a Reaction Process of Pulsed Power Driven Supercritical Fluid

T. Kiyam, Y. Iwasaki, T. Ishikawa, T. Mori

Faculty of Humanity-Oriented Science and Engineering, Kinki University, Fukuoka, Japan

PPC-P-8-30 Towards Quantifying the Influence of Self-Produced Radiation on Dielectric Surface Flashover

A. Fierro, J. Dickens, A. Neuber

Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, United States

PPC-P-8-31 Experimental Control of Electrical Breakdown Variance in Atmospheric Conditions

K. M. Williamson, L. B. Biedermann, H. P. Hjalmarsen, R. Coats

Sandia National Laboratories, Albuquerque, NM, United States

PPC-P-8-32 Experimental Study of the Underwater Plasma Based on the Phased Array Vibrator System

A. L. Fan, Y. H. Sun, P. Yan

Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China

PPC-P-8-33 IMPROVEMENT ON PMMA SURFACE BREAKDOWN USING PLASMA IMMERSION ION IMPLANTATION

A. R. Silva, J. O. Rossi, L. P. Silva Neto, M. Ueda

Associated Plasma Laboratory, National Institute for Space Research - INPE, S.J. Campos, SP, Brazil

PPC-P-8-34 High Voltage Breakdown Analysis of NiZn Ferrite Double-Positive Metamaterials

A. M. Pearson, R. D. Curry, K. M. Noel, S. A. Mounter, K. A. O'Connor

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

PPC-P-8-35 Experimental Study on Breakdown Characteristics of Propylene Carbonate-Based Nano-Fluids under Microsecond Pulses

Y. P. Hou¹, J. D. Zhang¹, Z. C. Zhang¹, Z. F. Liu², Z. Y. Song³

¹*College of Optoelectronic Science and Engineering, National University of Defense Technology, Changsha, China*

²*College of Aerospace Science and Engineering, National University of Defense Technology, Changsha, China*

³*Air Force Military Representative Office of Hunan Province, Changsha, China*

Session PPC-P-9: HPM Devices - Poster

Poster Session

Tuesday, June 2, 13:30-15:00, Salon H

Session Chairs: Matt McQuage, NSWC Dahlgren

Steve Calico, Lockheed Martin

PPC-P-9-36 Experimental Research on Ku-Band MILO

T. Jiang, J. Zhang, J. He, Z. Li, J. Ling

College of Optoelectronic Science and Engineering, National University of Defense Technology, Changsha, China

PPC-P-9-37 Regarding Coherence Effect in High Power Maser (microwave) Sources

M. M. Kekez

HEFTI - High-Energy Frequency Tesla Inc., Ottawa, Canada

PPC-P-9-38 A Wavelet Approach to Far Field Signal Reconstruction of Transient Electric Fields

K. Eldridge-Looker, A. Fierro, J. Dickens, A. Neuber

Center of Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

PPC-P-9-39 Design of an Anode Loss Current Diagnostic for an A6 Relativistic Magnetron

M. Lambrecht, M. Haworth

Directed Energy Directorate, Air Force Research Laboratory, Albuquerque, NM, United States

PPC-P-9-40 A System for Microwave-Plasma Interaction Experiments

V. P. Anitha¹, R. J. Priyavandana¹, D. V. Giri², D. Amita¹, P. K. Kaw¹

¹*Institute for Plasma Research, Gandhinagar, Gujarat, India*

²*Pro-Tech, Alamo, CA, USA*

PPC-P-9-41 A Pulsed Modulator to Improve Performances of Photoswitches Based Radiation Source Working at Very High Pulse Repetition Frequency (33mhz)

A. SILVESTRE de FERRON¹, L. Pecastaing¹, V. Couderc², B. Shalaby², R. Negrier³, M. Lalande³, J. Andrieu³, V. Bertrand⁴

¹*Universite de PAU, Laboratoire SIAME - Equipe Genie Electrique, PAU, France*

²*Universite de Limoges, XLIM / OSA, LIMOGES, France*

³*Universite de Limoges, XLIM / OSA - DUT GEII, BRIVE LA GAILLARDE, France*

⁴*CISTEME ESTER, LIMOGES, France*

PPC-P-9-42 Plasma Dynamics from Different Cathodes for High Power Microwave Application

G. Shafir¹, M. Kreif¹, J. Z. Gleizer¹, S. Gleizer¹, A. Fisher¹, Y. E. Krasik¹, V. V. Rostov²

¹*Physics departement, The Technion, Israel institue of Technology, Haifa, Israel*

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

PPC-P-9-43 Investigation of 2.85GSPS RF DAC as Arbitrary Waveform Generator for Wavelet Synthesis and Radiation

C. F. Lynn, J. C. Dickens, A. A. Neuber

Texas Tech University P3E, Lubbock, Tx, United States

PPC-P-9-44 High Power Microwave Vircator with an Electromagnetic Bandgap Medium

A. Elfrgani, S. Yurt, G. Atmatzakis, E. Schamiloglu

Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, United States

PPC-P-9-45 Giant Gain in Traveling Wave Tubes Operating near the Degenerate Band Edge Condition

M. A. K. Othman¹, M. Veysi¹, F. Capolino¹, A. Figotin²

¹*Electrical Engineering and Computer Science, University of California, Irvine, Irvine, CA, United States*

²*Department of Mathematics, University of California, Irvine, Irvine, CA, United States*

PPC-P-9-46 Characteristics of a 1D FDTD Simulation of Shockwave Formation in Ferrite Loaded Non-Linear Transmission Lines

G. Laity, D. Coleman, K. Struve

Sandia National Laboratories, Albuquerque, NM, United States

PPC-P-9-47 Application of a Method in the Eddy Current Analysis of the Divertor for EAST Device

L. Li, D. Yao, C. Liu, Z. Zhou, L. Cao

Institute of plasma physics chinese academy of sciences, hefei, China

PPC-P-9-48 High Power Meso-Band Microwave Source with Self Resonant Disc-Conical Antenna

H. Pengjun

Xi'an jiaotong university, Xi'an, China

PPC-P-9-49 Damage Modeling on a Radar Affected by High Power Electromagnetic Pulse

K. -C. Ko, K. -A. Lee, J. -H. Rhee

Electrical Engineering, Hanyang University, Seoul, South Korea

Session PPC-P-10: Prime Power and High Energy Density Storage - Poster

Poster Session

Tuesday, June 2, 13:30-15:00, Salon H

Session Chair: Christopher Yeckel, Stangenes Industries Inc.

PPC-P-10-50 Battery Charging and Discharging Kit with DAQ to Aid SOC Estimation

A. Usman, P. Kumar P

IEEE, KANPUR, India

PPC-P-10-51 Evaluation of 1000 V Batteries for Pulsed Power Applications

M. J. Martin¹, C. L. Williams¹, K. Mckinzie¹, J. Cohen¹, D. A. Wetz¹, C. G. Gnegy-Davidson¹, I. J. Cohen², J. M. Heinzel²

¹*Electrical Engineering Department, University of Texas at Arlington, Arlington, TX, United States*

²*Carderock Division, Naval Surface Warfare Center, Philadelphia, PA, United States*

PPC-P-10-52 High Rate Characterization of Valve Regulated Lead Acid Batteries for Use in Pulsed Power Applications

M. J. Martin¹, C. L. Williams¹, D. A. Wetz¹, J. M. Heinzel²

¹*Electrical Engineering Department, University of Texas at Arlington, Arlington, TX, United States*

²*Philadelphia Division, Naval Surface Warfare Center, Philadelphia, PA, United States*

PPC-P-10-53 Csns Linac Dtl Klystron Pulse Power System

J. Li, X. Xu, Z. Zhang, J. Qiao

Division of Accelerator Technology, China Spallation Neutron Source (CSNS), Institute of High Energy Physics (IHEP), Chinese Academy of Sciences (CAS), Dongguan, China

PPC-P-10-54 Experimental Data from an Alternate Topology HVCM developed to support a Power Upgrade required by a Second Target Station (STS) at SNS*

D. J. Solley, D. E. Anderson, V. V. Peplov, M. W. Wezensky

Oak Ridge National Laboratory, Oak Ridge, TN, United States

PPC-P-10-55 The Research of High Voltage Power Supply with a High-Energy Arc Fracturing Device

R. Y. Fu, Y. H. Sun, Y. H. Gao, P. Yan

Institute of electrical engineering , Chinese academy of sciences, beijing, China

PPC-P-10-56 Analysis and Design of a Lcc Resonant Current-Source Power Supply for Pfu Charging Applications

Z. C. Wang¹, D. Y. Wang¹, B. C. Wang¹, Z. J. Zhan¹, L. Jia²

¹Key Lab of Power Electronics for Energy Conservation and Motor Drive of Hebei Province, YanShan University, Qinhuangdao, Hebei Province, China

²State Key Laboratory of Metastable Materials Science and Technology, YanShan University, Qinhuangdao, Hebei Province, China

PPC-P-10-57 Implementation of a Battery Management and Protection System for High Power Pulsed Applications

E. S. Cordero¹, S. Holt¹, J. Dickens¹, A. Neuber¹, J. Mankowski¹, S. Calico², M. Scott²

¹Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

²Missiles and Fire Control, Lockheed Martin Corporation, Grand Prairie, TX, United States

Session PPC-P-11: Solid State Switches - Poster

Poster Session

Tuesday, June 2, 13:30-15:00, Salon H

Session Chair: Stephen Bayne, Texas Tech University

PPC-P-11-58 Fast and Accurate Electro-Thermal Behavioral Model of a Commercial SiC 1200V, 80 mΩ Power MOSFET

B. N. Pushpakaran¹, S. B. Bayne¹, G. Wang², J. Mookken²

¹Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States

²Power Applications, CREE Inc., Durham, NC, United States

PPC-P-11-59 Development of Secondary Breakdown Circuit for dV/dt Analysis of SiC Devices

J. A. Schrock, W. B. Ray, A. V. Bilbao, M. D. Kelley, E. A. Hirsch, S. L. Holt, S. B. Bayne

Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States

PPC-P-11-60 Physics Based Electro-Thermal Transient Simulation of 4H-SiC JBS Diode Using Silvaco ATLAS

B. N. Pushpakaran¹, S. B. Bayne¹, A. A. Ogunniyi²

¹Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States

²Army Research Lab, Adelphi, MD, United States

PPC-P-11-61 Extraction of Safe Operating Area and Long Term Reliability of Experimental Silicon Carbide Super Gate Turn off Thyristors

S. L. Lacouture¹, J. A. Schrock¹, W. B. Ray¹, E. A. Hirsch¹, S. B. Bayne¹, M. Giesselmann¹, H. O'Brien², C. Scozzie²

¹Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States

²Army Research Lab, Adelphi, MD, United States

PPC-P-11-62 STUDY of FAST RISE TIME PULSE POWER GENERATOR USING SiC-MOSFET and FRD

K. Yamashita¹, T. Hatanaka¹, T. Sakugawa²

¹Graduate School of Science and Technology, Kumamoto University, Kumamoto, Kumamoto, Japan

²Institute of Pulsed Power Science, kumamoto university, Kumamoto, Kumamoto, Japan

PPC-P-11-63 Evaluation and Comparison of 1200-V / 285-a Sic Half-Bridge Mosfet Modules

M. D. Kelley, S. B. Bayne, J. A. Schrock, A. V. Bilbao, W. B. Ray

Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

PPC-P-11-64 Development of SiC Multi-Chip Module for Pulse Switching at 10 kV, 100 kA

H. O'Brien¹, A. Ogunniyi¹, W. Shaheen², C. J. Scozzie¹, V. Temple³

¹U. S. Army Research Laboratory, Adelphi, MD, United States

²Berkeley Research Associates, Beltsville, MD, United States

³Silicon Power Corp., Clifton Park, NY, United States

PPC-P-11-65 Analysis of Carrier Lifetime Effects on High Voltage SiC PiN Diodes at Elevated Pulsed Switching Conditions

A. Ogunniyi, H. O'Brien, M. Hinojosa, L. Cheng, C. Scozzie

U.S. Army Research Laboratory, Adelphi, MD, United States

PPC-P-11-66 Characterization of Intra-Bandgap Defect States Through Leakage Current Analysis for Optimization of Silicon Carbide Photoconductive Semiconductor Switches

D. Thomas, D. Mauch, A. Neuber, J. Dickens

Center for Pulsed Power and Power Electronics, Texas Tech, Lubbock, TX, United States

PPC-P-11-67 Analysis of Advanced 20 kV / 20 A Silicon Carbide Power Insulated Gate Bipolar Transistor in Resistive and Inductive Switching Tests

A. V. Bilbao, J. A. Schrock, W. B. Ray, M. D. Kelley, S. B. Bayne

Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States

PPC-P-11-68 di/dt Evaluation of a Si N-Type GTO Designed for Pulsed Power Applications

T. Flack¹, C. Hettler², S. Bayne¹

¹*Center for Pulsed Power and Power Electronics, Texas Tech University, TX, United States*

²*EM & Pulse Power Applications, Scientific Applications and Research Associates Inc., CO, United States*

PPC-P-11-69 Gateable Diamond High Charge Throughput Electron Source

R. P. Shurter, J. M. Taccetti, D. C. Moir

AOT/AE, Los Alamos National Lab, Los Alamos, NM, United States

Session PPC-P-12: High Current Accelerators, Beams, and Concepts - Poster

Poster Session

Tuesday, June 2, 13:30-15:00, Salon H

Session Chair: Matthias Geissel, Sandia National Laboratories

PPC-P-12-70 New Square Pulse LTD Technology

L. Zhou, M. Wang

Institute of Fluid Physics, CAEP, Mianyang, Sichuan, China

PPC-P-12-71 Novel Trigger Manner Based on Internal Bricks in Cavities for Linear Transformer Drivers with Internal Water-Insulated Lines

F. Sun¹, J. Zeng¹, A. Qiu¹, H. Wei², X. Jiang¹, Z. Wang¹, T. Liang¹, P. Cong¹, J. Yin²

¹*State Key Laboratory of Intense Pulsed Radiation Simulation and Effect, Northwest Institute of Nuclear Technology, Xi'an, China*

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

PPC-P-12-72 DOUBLE-PULSE HIGH VOLTAGE SYSTEM for 2-MeV, 2-kA LINEAR INDUCTION ACCELERATOR POWER SUPPLY

A. Akimov¹, P. Bak¹, A. Eliseev¹, A. Korepanov¹, Y. Kulenko¹, P. Logachev¹, A. Pachkov¹, A. Panov¹, O. Pavlov¹,

D. Starostenko¹, O. Nikitin², A. Akhmetov²

¹*Budker Institute of Nuclear Physics, Novosibirsk, Russian Federation*

²*VNIITF, Snezhinsk, Russian Federation*

PPC-P-12-73 TRIPLE-PULSE MODULATOR for 20-MeV, 2-kA LINEAR INDUCTION ACCELERATOR POWER SUPPLY

A. Akimov¹, P. Bak¹, P. Logachev¹, O. Nikitin²

¹*Budker Institute of Nuclear Physics, Novosibirsk, Russian Federation*

²*VNIITF, Snezhinsk, Russian Federation*

PPC-P-12-74 Design of a 2 MV, 3 Ohm Flash Radiographic Driver - Charybdis

A. Jones, D. Goude, J. Macdonald, T. Williams

Applied Physics, Atomic Weapons Establishment, Reading, United Kingdom

PPC-P-12-75 Design and Construction of Demountable Circular Coil with High Current Density Contacts

G. Ramos, M. Lindero-Hernandez, M. Nieto-Perez

Instituto Politecnico Nacional, Queretaro QRO, Mexico

PPC-P-12-76 Evaluation of Spot Size and Dose of the Self-Magnetic Pinch Diode on the RITS-6 Accelerator from 3-8 MV

T. J. Webb¹, M. L. Kiefer¹, M. D. Johnston¹, J. J. Leckbee¹, D. R. Welch², N. Bennett³

¹Sandia National Laboratories, Albuquerque, NM, United States

²Voss Scientific, Albuquerque, NM, United States

³National Security Technologies, LLC, Las Vegas, NV, United States

PPC-P-12-77 Positive Polarity Experiment on the CEA 1 MV LTD

M. Toury¹, F. Cartier¹, M. Caron², J. J. Leckbee², M. L. Kiefer²

¹CEA, Gramat, France

²Sandia National Laboratories, Albuquerque, USA

PPC-P-12-78 LSP Simulations of the Self-Magnetic-Pinch Diode

D. W. Goude, J. Threadgold

Applied Physics, Atomic Weapons Establishment, Reading, United Kingdom

PPC-P-12-79 Investigation of Self Magnetic Pinch Diode Performance Variations from Intentionally Created Diode Preparation Faults and Defects

J. Threadgold, D. Goude

Applied Physics, Atomic Weapons Establishment, Reading, United Kingdom

PPC-P-12-80 MULTI-PULSE ELECTRON DIODE DEVELOPMENT FOR PULSED POWER DRIVEN FLASH RADIOGRAPHY

M. G. Mazarakis, M. Hess, M. Keifer, J. J. Leckbee, R. McKee, D. Rovang, M. Cuneo

Pulsed Power, Sandia National Laboratories, Albuquerque, NM, USA

Session PPC-O-10: X and Z-Pinches, X-ray Lasers & Radiation Sources - In honor of Norm Roderick

Tuesday, June 2, 15:00-17:35, Salon G

Session Chair: Matt Gomez, Sandia National Laboratories

15:00 PPC-O-10-1 The Generation of Warm Dense Matter Using Fast Magnetic Compression

P. A. Gourdain^{1,2}, R. Betti^{1,2}, D. D. Meyerhofer^{1,2}, G. Fiksel²

¹Department of Physics and Astronomy, University of Rochester, Rochester, NY 14627, United States

²Laboratory for Laser Energetics, University of Rochester, Rochester, NY 14627, United States

15:15 PPC-O-10-2 (invited) Gas-Puff Z-Pinches, a Review of Progress and Potential Future Directions

R. J. Comisso, J. L. Giuliani

Plasma Physics Division, Naval Research Laboratory, Washington DC, United States

15:45 PPC-O-10-3 High Performance Vacuum System for a Radiographic Diode

E. C. Ormond¹, D. R. Bozman¹, M. R. Garcia¹, M. L. Kiefer², J. R. Smith³, D. E. Good⁴, D. J. Henderson⁴, K. W. Hogge⁴,

S. R. Huber⁴, M. K. Misch⁴, C. V. Mitton⁴, I. Molina⁴, S. R. Richards⁴

¹Sandia National Laboratories, Mercury, NV, United States

²Sandia National Laboratories, Albuquerque, NM, United States

³Los Alamos National Laboratory, Los Alamos, NM, United States

⁴National Security Technologies, North Las Vegas, NV, United States

16:05 PPC-O-10-4 High Power Positron Beam as a New Direction of Pulsed Power Research

V. V. Gorev

Kurchatov Institute, Moscow, Russian Federation

16:20 PPC-O-10-5 Simulation Study of Wire Array Z-Pinch Implosion Experiments on the PTS

N. Ding, C. Xue, Y. Zhang, S. Sun

Institute of Applied Physics and Computational Mathematics (IAPCM), Beijing, China

16:35 PPC-O-10-6 Design of a 4MA LTD-Based Accelerator for Wire-Array Z-Pinch

L. Zhou, C. Liang, Z. Wang, M. Li, Y. Chu, Z. Li

Laboratory of Advanced Nuclear Energy, Institute of Nuclear Physics and Chemistry, China Academy of engineering physics,

Mianyang, Sichuan, China

16:50 PPC-O-10-7 Energy Balance Mechanism of X-Ray Radiation of Stagnating Plasmas in Wire Array Z Pinches

J. K. Dan, X. D. Ren, X. B. Huang

Institute of Fluid Physics, China Academy of Engineering Physics, Mianyang, China

17:05 PPC-O-10-8 Power Conditioning in the National Ignition Facility

P. A. Arnold¹, B. J. Le Galloudec¹, G. F. James¹, D. M. Acosta-Lech², J. D. Foley², A. L. Harkey², N. Lao², M. E. McIntosh², M. A. Mungia², H. V. Nghiem², D. A. Schwedler², D. R. Taylor²

¹*Lawrence Livermore National Laboratory, Livermore, CA, United States*

²*Akima Infrastructure Services, Livermore, CA, United States*

17:20 PPC-O-10-9 Design and Optimization of Quasi-Spherical Implosions with Wire Arrays

Y. Zhang¹, N. Ding¹, Z. Li², R. Xu², D. Chen²

¹*Institute of applied physics and computational mathematics, Beijing, China*

²*Institute of Nuclear Physics and Chemistry, Mianyang, China*

Session PPC-O-11: Generators, Drivers, PFNs, and Alternate Technologies II

Tuesday, June 2, 15:00-17:30, Salon F

Session Chair: Ray Allen, Naval Research Laboratory

15:00 PPC-O-11-1 Affordable Short Pulse Marx Modulator

M. Kempkes¹, R. Phillips¹, M. Gaudreau¹, J. Casey²

¹*Diversified Technologies Inc., Bedford, MA, United States*

²*Rockfield Research, Inc., Las Vegas, NV, United States*

15:15 PPC-O-11-2 Type-E Pulse-Forming-Network Theory and Synthesis

C. R. Rose

WX-5, Los Alamos National Laboratory, Los Alamos, NM, United States

15:30 PPC-O-11-3 Enhancements to the Short Pulse Nanosecond X-Radiator (SPHINX) Pulsed Power System

N. R. Joseph, M. E. Savage, J. C. Stephens, B. A. Lewis, J. A. Lott, R. D. Thomas

Sandia National Laboratories, Albuquerque, NM, United States

15:45 PPC-O-11-4 (invited) Multistage Marx with Parallel Active Droop Compensation for Long Pulses

C. Yeckel, R. Cassel, M. Stangenes

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

16:15 PPC-O-11-5 Development of All-Solid-State Flash X-Ray Generator with High Frame Rate

X. Ma, J. J. Deng, H. T. Li, H. W. Liu, J. Q. Yuan, P. Jiang, L. Y. Wang

Institute of Fluid Physics, CAEP, mianyang, China

16:30 PPC-O-11-6 Design and Development of 100 Kj, 75 Khz Electro-Magnetic Pulse Welding System for ODS

R. Kumar¹, P. C. Saroj², S. Kumar², M. R. Kulkarni², T. S. Kolge², S. K. Sharma², A. Shaju³, C. Das³, A. Sharma², A. Shyam¹,

D. Bora¹

¹*Pulsed Power, Institute for plasma research, Gandhinagar, India*

²*BARC, Mumbai, India*

³*IGCAR, Chennai, India*

16:45 PPC-O-11-7 Development of Low Impedance Nano-Second Pulse Generator and Construction Measurement Environment

S. Matsumoto

Kumamoto university, Faculty of Engineering, Computer Science and Electrical Engineering, Kumamoto, Japan

17:00 PPC-O-11-8 Repetitive Pulsed Power Generator Based on Hybrid LTD

W. Jiang, M. R. Ghurbanali, T. Sugai, A. Tokuchi

Nagaoka University of Technology, Nagaoka, Niigata, Japan

17:15 PPC-O-11-9 A Extendable Trigger Technology for Large LTD Facility

L. Zhou, M. Wang

Institute of Fluid Physics, CAEP, Mianyang, Sichuan, China

Session PPC-O-12: High Current Accelerators

Tuesday, June 2, 15:00-17:35, 615 AB

Session Chair: Fred Bayol, ITHPP

15:00 PPC-O-12-1 Design of a collimation system for the chromatic portion of an electron beam

J. E. Coleman, D. C. Moir

Los Alamos National Laboratory, Los Alamos, NM, United States

15:15 PPC-O-12-2 Routine Transmission Line Damage on the Z Machine

J. Reneker, M. R. Gomez, C. A. Jennings, D. C. Lamppa

Sandia National Laboratories, Albuquerque, NM, United States

15:30 PPC-O-12-3 Experimental Results and Circuit Modeling of an 18-Brick LTD Cavity

J. J. Leckbee¹, B. Bui¹, M. L. Kiefer¹, M. E. Sceiford¹, H. L. Wigelsworth²

¹*Sandia National Laboratories, Albuquerque, NM, United States*

²*Fiore Industries, Inc, Albuquerque, NM, United States*

15:45 PPC-O-12-4 DEVELOPMENT and TEST of a ~800kV, ~35kA AIR INSULATED LTD PULSER for RADIOGRAPHY APPLICATION

F. Bayol¹, J. Calvignac¹, R. Delplanque¹, C. Gaston¹, P. Mouly¹, K. Van de Wiel¹, S. Briscall², S. Hill², A. Jones², M. Sinclair², M. Weeks²

¹*ITHPP, Thegra, France*

²*AWE, Aldermaston, United Kingdom*

16:00 PPC-O-12-5 Electron-Beam Dynamics for an Advanced Flash-Radiography Accelerator

C. Ekdahl

Los Alamos National laboratory, Los Alamos, NM, United States

16:15 PPC-O-12-6 (invited) Optimization Procedure for the Thor Megabar-Class Pulsed Power Accelerator

E. M. Waisman¹, D. B. Reisman², B. S. Stoltzfus²

¹*1650, Sandia National Laboratories, albuquerque,nm, USA*

²*1651, Sandia National Laboratories, albuquerque,nm, USA*

16:45 PPC-O-12-7 Preliminary Design Concept of Shielding Blanket for CFETR Reactor

C. Liu, J. Zhang, L. Li, H. Yang, D. Yao, X. Gao

Institute for Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, 230031, China, Hefei, China

17:00 PPC-O-12-8 Design of the Self-Triggering Fast Linear Transformer Driver Based on Electromagnetic Induction

L. Yu, J. Qiu, K. Liu

Fudan University, Shanghai, China

17:15 PPC-O-12-9 Explosive Magnetic Pulsed Power System to Realize Thermonuclear Ignition with Z Pinch X-Radiation

A. V. Ivanovskiy

Russian Federal Nuclear Center, Sarov, Russian Federation

Session PPC-PLEN-3: Wednesday Plenary - HAAS AWARD Winner

Wednesday, June 3, 08:00-09:15, Salon F

Session Chair: Jane Lehr, University of New Mexico

8:00 PPC-PLEN-3-1 Pulsed Power: An Enabling Technology for Extreme Electromagnetics

E. Schamiloglu

Department of Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, United States

Session PPC-O-13: Codes and Modeling

Wednesday, June 3, 09:45-12:15, Salon G

Session Chair: Braxton Bragg, Lockheed Martin

9:45 PPC-O-13-1 Simulation Boundary Model for Multi-Mode, Multi-Frequency Signals Using the Higdon Operator

L. D. Ludeking, A. J. Woods

Alliant Techsystems, LLC, Newington, VA, United States

10:00 PPC-O-13-2 Development and Validation of PIC-DSMC Air Breakdown Model in the Presence of Dielectric Particles

C. H. Moore, H. P. Hjalmarnson, L. B. Biedermann, K. M. Williamson, P. A. Schultz, R. E. Jorgenson

Sandia National Labs, Albuquerque, US

10:15 PPC-O-13-3 MAGIC3D FDTD EM-PIC Code Cut Cell Slow Wave Serpentine Calculation

A. J. Woods, L. D. Ludeking

Alliant Techsystems Operations, LLC (ATK), Newington, VA, United States

10:30 PPC-O-13-4 (invited) Particle-in-Cell Modeling of a Hard-Tube Reflex-Triode Vircator

P. M. Kelly¹, J. M. Parson¹, C. C. Lynn¹, J. C. Dickens¹, A. A. Neuber¹, S. E. Calico², M. C. Scott², J. J. Mankowski¹

¹*Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States*

²*Lockheed Martin Missiles and Fire Control, Grand Prairie, TX, United States*

11:00 PPC-O-13-5 3d Simulation on Effect of Bjt with Microwave Pulses Injected from Base

J. Zhang, H. Wang, G. Du, C. Zhang, H. Yang

College of Optoelectronic Science and Engineering, National University of Defense Technology, Changsha, China

11:15 PPC-O-13-6 Study of the Feasibility of Warm Dense Matter Generation Using Metal Foil Electric Explosion under Megaampere Current Drive

S. F. Garanin¹, S. D. Kuznetsov¹, R. E. Reinovsky²

¹*Russian Federal Nuclear Center "All Russian Scientific Research Institute of Experimental Physics, Sarov, Nizhny Novgorod region, Russian Federation*

²*Los Alamos National Laboratory, Los Alamos, New Mexico, USA*

11:30 PPC-O-13-7 Characterization and Modeling of Amorphous Metallic Cores

M. Taccetti¹, J. B. Johnson², C. R. Rose²

¹*AOT-AE, Los Alamos National Laboratory, Los Alamos, NM, United States*

²*WX-5, Los Alamos National Laboratory, Los Alamos, NM, United States*

11:45 PPC-O-13-8 Simulations of Magnetic Flux Compression Generators with Lanl Eulerian Amr and Ale Codes

J. H. Goforth, R. G. Watt, F. L. Cochran, H. Oona, C. L. Rousculp, A. J. Scannapieco

Los Alamos National Laboratory, Los Alamos, NM, United States

12:00 PPC-O-13-9 Recent Advance in Isentropic Compression Experiments on Pts Facility

G. -L. Wang

Key Laboratory of Pulsed Power, Institute of Fluid Physics, CAEP, Mianyang, Sichuan, China

Session PPC-O-14: Fusion - Inertial, Magnetic & Alternate Concepts

Wednesday, June 3, 09:45-12:00, Salon F

Session Chair: George R Laity, Sandia National Laboratories

9:45 PPC-O-14-1 Progress in Pulsed Magneto-Inertial Fusion

K. J. Peterson, S. A. Slutz, A. B. Sefkow, D. B. Sinars, K. D. Hahn, S. B. Hansen, E. C. Harding, P. F. Knapp, P. F. Schmit,

C. A. Jennings, T. J. Awe, M. Geissel, D. C. Rovang, G. A. Chandler, M. E. Cuneo, A. J. Harvey-Thompson, M. C. Herrmann,

D. C. Lampa, M. R. Martin, R. D. McBride, J. L. Porter, G. A. Rochau, C. L. Ruiz, M. E. Savage, I. C. Smith, R. A. Vesey

Sandia National Labs, Albuquerque, NM, United States

10:00 PPC-O-14-2 (invited) Recent Progress in Magnetized Liner Inertial Fusion (MagLIF) Experiments

M. R. Gomez, S. A. Slutz, A. B. Sefkow, M. Geissel, A. J. Harvey-Thompson, K. J. Peterson, T. J. Awe, S. B. Hansen,

E. C. Harding, K. D. Hahn, P. F. Knapp, P. F. Schmit, C. L. Ruiz, D. B. Sinars, C. A. Jennings, I. C. Smith, D. C. Rovang,

G. A. Chandler, M. R. Martin, R. D. McBride, J. L. Porter, G. A. Rochau

Sandia National Laboratories, Albuquerque, NM, United States

10:30 PPC-O-14-3 X-Ray Imaging of MagLIF Experiments Using a Spherically-Bent Crystal Optic

E. C. Harding, M. R. Gomez, S. A. Slutz, A. B. Sefkow, M. Geissel, A. J. Harvey-Thompson, M. Schollmeier, K. J. Peterson, T. J. Awe, S. B. Hansen, K. D. Hahn, P. F. Knapp, P. F. Schmit, C. L. Ruiz, D. B. Sinars, C. A. Jennings, I. C. Smith, D. C. Rovang, G. A. Chandler, M. R. Martin, R. D. McBride, J. L. Porter, G. A. Rochau

Sandia National Labs, Albuquerque, NM, United States

10:45 PPC-O-14-4 The Path to 30 Tesla: Field Coil Designs for the Magnetized Liner Inertial Fusion (MagLIF) Concept at Sandia's Z Facility

D. C. Lamma¹, D. C. Rovang¹, L. M. Lucero¹, R. J. Kaye¹, D. B. Sinars¹, J. Meissner², M. Milhous²

¹*Sandia National Laboratories, Albuquerque, NM, United States*

²*Milhous Company, Amherst, VA, United States*

11:00 PPC-O-14-5 Stability of the Fuel/Liner Interface in Magnetized Liner Implosions

M. R. Weis¹, P. Zhang¹, Y. Y. Lau¹, R. M. Gilgenbach¹, K. J. Peterson², M. H. Hess²

¹*Nuclear Engineering and Radiological Sciences, University of Michigan, Ann Arbor, MI, United States*

²*Sandia National Laboratories, Albuquerque, NM, United States*

11:15 PPC-O-14-6 Magneto-Rayleigh-Taylor, Sausage, and Kink Instabilities in Cylindrical Liners

P. Zhang¹, M. R. Weis¹, Y. Y. Lau¹, R. M. Gilgenbach¹, P. F. Schmit², K. J. Peterson², M. H. Hess²

¹*Nuclear Engineering and Radiological Sciences, University of Michigan, Ann Arbor, MI, United States*

²*Sandia National Laboratories, Albuquerque, NM, United States*

11:30 PPC-O-14-7 Operation of Parallel Rail-Gap Switches in a High-Current, Low-Inductance Crowbar Switch

C. Gragowski¹, J. H. Degnan¹, M. T. Domonkos¹, E. L. Ruden¹, J. Parker², J. F. Camacho², J. McCullough², W. Sommars², G. A. Wurden³, T. Weber³

¹*Directed Energy Directorate, Air Force Research Laboratory, Kirtland AFB, NM, United States*

²*Leidos, Inc., Albuquerque, NM, United States*

³*P-24 Physics Division, Los Alamos National Laboratory, Los Alamos, NM, United States*

11:45 PPC-O-14-8 Batch Burn Estimate of Thermal Neutron Yield in Pulsed Z-Pinches by Time and Spatial Integration of the Magnetic Noh Problem

B. Winterling, R. Agnew, J. Cassibry

Propulsion Research Center, University of AL in Huntsville, Huntsville, AL, United States

Session PPC-O-15: Diagnostics

Wednesday, June 3, 09:45-12:15, 615 AB

Session Chair: Shad Holt, Texas Tech University

9:45 PPC-O-15-1 An optical diagnostic suite for probing Warm Dense Matter produced by intense relativistic electrons

J. E. Coleman¹, C. Carlson²

¹*Los Alamos National Laboratory, Los Alamos, NM, United States*

²*National Security Technologies, Los Alamos, NM, United States*

10:00 PPC-O-15-2 Pauper Spectrometer for MeV Range X-Ray Sources

T. Meehan, S. Mitchell

Nstec, Las Vegas, Nevada, United States

10:15 PPC-O-15-3 Improving the Accuracy and Survivability of B-Dot Probes in Magnetic Flux Compression Generators

A. D. White¹, J. B. Javedani¹, C. S. Anderson¹, R. A. Anderson¹, D. A. Goertz¹, D. B. Reisman², E. V. Baluyot¹, M. W. Danforth¹, L. J. Tellerico¹, A. J. Ferreira¹

¹*Lawrence Livermore National Laboratory, Livermore, CA, United States*

²*Sandia National Laboratories, Albuquerque, NM, United States*

10:30 PPC-O-15-4 Recasting Radiographic Image Data for Accurate Inverse Abel Transformations

S. E. Mitchell, A. Luttman

National Security Technologies, LLC, Las Vegas, NV, United States

10:45 PPC-O-15-5 Compressed Ultrafast Imaging Beam Diagnostic

D. G. Marks¹, D. K. Frayer¹, C. A. Ekdahl²

¹Los Alamos Operations, National Security Technologies, Los Alamos, NM, United States

²WX-5, Los Alamos National Laboratory, Los Alamos, NM, United States

11:00 PPC-O-15-6 (invited) Study of Wire-Array Z Pinches with Uv Multichannel Diagnostics

V. V. Ivanov¹, A. A. Anderson¹, B. S. Bauer¹, K. C. Yates¹, S. Fuelling¹, T. Hutchinson¹, J. Mei¹, T. J. Awe²

¹University of Nevada, Reno, Reno, NV, United States

²Sandia National Laboratories, Albuquerque, NM, United States

11:30 PPC-O-15-7 Quantitative Study on Sharpness in Phase Contrast Imaging with a Tabletop X-Pinch Device

R. Zhang^{1,2}, H. Luo¹, X. Zou¹, X. Wang¹

¹Electrical Engineering, Tsinghua university, Beijing, China

²Institute of Electrical Engineering, Chinese Academy of Science, Beijing, China

11:45 PPC-O-15-8 Mechanical Engineering of the ITER ECE Port-Plug Based Components

C. Roman¹, G. Taylor¹, W. Rowan², R. Feder¹, D. W. Johnson¹, V. S. Udintsev³, J. Beno², J. Hsiao¹, M. E. Austin², A. Hubbard⁴,

R. Ellis⁵, H. Ouroua², C. Hause¹, S. Houshmandyar²

¹ITER, PPPL, PRINCETON, United States

²The University of Texas at Austin, Austin, United States

³ITER Organization, St Paul Lez Durance, France

⁴Plasma Science and Fusion Center, MIT, Boston, United States

⁵University of Maryland, College Park, United States

12:00 PPC-O-15-9 Soft X-Ray Flux Diagnostics on PTS

K. -L. Wang, X. -B. Huang, J. -J. Den, W. -P. Xie, S. -P. Feng, M. Wang, X. -D. Ren, S. -Q. Zhang, J. Li, J. -K. Dan, S. -

T. Zhou, Q. Xu, H. -C. Cai, K. Ouyang, C. Ji, B. Wei

Key Laboratory of Pulsed Power Technology, IFP CAEP, Mianyang, Sichuan, China

Session PPC-O-16: Opening and Closing Switches

Wednesday, June 3, 13:30-16:00, Salon G

Session Chair: Heather O'Brien, U. S. Army Research Laboratory

13:30 PPC-O-16-1 Fast Charge, Oil Switch Jitter Measurements

W. C. Nunnally, M. B. Lara

Applied Physical Electronics, LC, Austin, TX, United States

13:45 PPC-O-16-2 (invited) Two-Electrode Gas Switch with Electrodynamical Acceleration of a Discharge Channel

A. V. Kharloy, B. M. Kovalchuk, E. V. Kumpyak, N. V. Tsoy

Institute of High Current Electronics, TOMSK, Russian Federation

14:15 PPC-O-16-3 Optimization of the Optical Triggering of SiC Photoconductive Semiconductor Switches

D. Mauch, J. Shaver, V. Meyers, J. Mankowski, J. Dickens, A. Neuber

Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

14:30 PPC-O-16-4 Ultra-Fast, High Reliability Solid State Thyatron, Ignatron and Thyristor Replacement

J. Waldron, K. Brandmier

Silicon Power Corporation, Malvern, PA, United States

14:45 PPC-O-16-5 GAS SELECTION AND FLOW OPTIMIZATION FOR A 1 KHZ TRIGATRON SPARK GAP

W. H. Cravey, D. V. Reale, R. S. Garcia, J. M. Johnson, A. A. Neuber, J. C. Dickens, J. J. Mankowski

Electrical and Computer Engineering/Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, Texas,

United States

15:00 PPC-O-16-6 Compact, High Voltage Solid-State Switch Development at Afri

S. L. Heidger¹, A. Lerma², M. Kostora², D. Brown², J. Parker², E. Loree³, M. Domonkos¹

¹AIR FORCE RESEARCH LABORATORY, Kirtland AFB, NM, United States

²Leidos, Albuquerque, NM, United States

³Loree Engineering, Albuquerque, NM, United States

15:15 PPC-O-16-7 Modeling the Dynamic Behavior of Dielectric Puncture Switches Using ALE3D

A. J. Johnson, A. J. Young, A. D. White

Lawrence Livermore National Laboratory, Livermore, CA, United States

15:30 PPC-O-16-8 Evaluation of GaN:Fe as a High Voltage Photoconductive Semiconductor Switch for Pulsed Power Applications

D. Mauch¹, J. Dickens¹, A. Neuber¹, V. Kuryatkov², S. Nikishin², R. Ness³

¹Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

²Nano Technology Center, Texas Tech University, Lubbock, TX, United States

³Ness Engineering Inc., San Diego, CA, United States

15:45 PPC-O-16-9 CHARACTERIZATION of CONDUCTING TIME on the LASER-TRIGGERED VACUUM SWITCHES

W. Fan, Z. He, X. Mao

School of Electric and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, Hubei province, China

Session PPC-O-17: Intense Electron and Ion Beams

Wednesday, June 3, 13:30-16:00, Salon F

Session Chair: Jacob Zier, Naval Research Laboratory

13:30 PPC-O-17-1 A Comparison of Spot Sizes and Target Resolution Between Sealed-Tube Reusable Diodes and Single-Shot, High-Impedance, NRL Radiography Diodes for Flash X-Ray Systems at 1.0-MV and 2.3-MV

D. P. Murphy¹, R. J. Allen¹, J. W. Schumer¹, D. D. Hinshelwood¹, I. M. Rittersdorf¹, G. Cooperstein², D. Mosher²

¹Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

²Engility Corporation, Alexandria, VA, United States

13:45 PPC-O-17-2 Particle-in-Cell Simulations of the Hybrid Radiation Source Radiographic Diode at 2.5 MV

I. M. Rittersdorf¹, R. J. Allen², D. P. Murphy², G. Cooperstein³, D. Mosher³, D. D. Hinshelwood², A. S. Richardson²,

J. W. Schumer²

¹National Research Council Postdoctoral Fellow at NRL, Washington, DC, United States

²Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

³Engility Corporation, Alexandria, VA, United States

14:00 PPC-O-17-3 Initial Characterization of the Mercury IVA as a Surrogate Driver for Cygnus-Class Radiography

J. W. Schumer¹, R. J. Allen¹, D. D. Hinshelwood¹, G. Cooperstein¹, D. P. Murphy¹, D. G. Phipps¹, S. B. Swanekamp¹,

B. V. Weber¹, J. C. Zier¹, D. W. Droemer², D. S. Nelson², E. C. Ormond³

¹Plasma Physics Division, Naval Research Laboratory, Washington, DC, USA

²National Security Technologies, Las Vegas, NV, USA

³Sandia National Laboratories, Mercury, NV, USA

14:15 PPC-O-17-4 Benchmarking An Advanced Gas Chemistry Model for Short-Pulse, High-Energy Electron Beam Transport in A Gas Cell

J. R. Angus¹, D. D. Hinshelwood¹, B. V. Weber¹, R. J. Comisso¹, S. L. Jackson¹, D. Mosher², P. F. Ottinger², D. G. Phipps¹,

A. S. Richardson¹, J. W. Schumer¹, S. B. Swanekamp¹

¹Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

²Engility Incorporation, Alexandria, VA, United States

14:30 PPC-O-17-5 Plasma Dynamics in the Rod-Pinch at 2MV

N. Bennett, S. E. Mitchell

National Security Technologies, LLC, Las Vegas, NV, United States

14:45 PPC-O-17-6 Simulations of a Self-Magnetic-Pinch Radiographic Diode with a Heated Anode

A. S. Richardson¹, J. C. Zier¹, I. M. Rittersdorf², P. F. Ottinger³, J. W. Schumer¹, S. B. Swanekamp¹, B. V. Weber¹,
D. D. Hinshelwood¹

¹Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

²National Research Council, Washington, DC, United States

³Engility Corporation, Chantilly, VA, United States

15:00 PPC-O-17-7 Pulsed Anode Heating Apparatus for Self-Magnetic-Pinch Diode Experiments

B. V. Weber¹, C. N. Boyer², D. G. Phipps¹, J. C. Zier¹

¹Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

²Engility, Inc., Alexandria, VA, United States

15:15 PPC-O-17-8 Self-Magnetic-Pinch Radiographic Diode Experiments Using a Heated Anode on NRL's Mercury IVA at -5.5 MV

J. C. Zier¹, B. V. Weber¹, C. Boyer², G. Cooperstein³, D. D. Hinshelwood¹, A. S. Richardson¹, I. M. Rittersdorf⁴, J. W. Schumer¹,
S. B. Swanekamp¹

¹Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

²Engility Corporation, Chantilly, VA, United States

³Independent Contractor, Engility Corporation, Chantilly, VA, United States

⁴Naval Research Laboratory, National Research Council Postdoctoral Associate, Washington, DC, United States

15:30 PPC-O-17-9 Study of the Electric Field Screening Effect on Low Number of Carbon Fiber Field Emitters

W. Tang¹, D. Shiffler¹, M. Lacour², K. Golby²

¹Directed Energy Directorate, Air Force Research Laboratory, Albuquerque, NM, United States

²Leidos Inc, Albuquerque, NM, United States

15:45 PPC-O-17-10 Controlling Hollow Relativistic Electron Beam Orbits with an Inductive Current Divider

S. B. Swanekamp¹, A. S. Richardson¹, J. R. Angus¹, G. Cooperstein², D. D. Hinshelwood¹, P. F. Ottinger², I. M. Rittersdorf³,
J. W. Schumer¹, B. V. Weber¹, J. C. Zier¹

¹Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

²Engility, Chantilly, VA, United States

³National Research Council Postdoc, Washington, DC, United States

Session PPC-O-18: Electromagnetic Launch

Wednesday, June 3, 13:30-16:00, 615 AB

Session Chairs: Ian McNab, EMRG Solutions

Ryan Hoffman, US Office of Naval Research

13:30 PPC-O-18-1 Electromagnetic Rail Accelerator of Solids Powered by a Pulsed Mhd Generator

G. A. Shvetsov¹, A. G. Afonin², V. G. Butov², S. V. Sinyaev², V. A. Solonenko², V. P. Panchenko³, A. A. Yakushev³

¹Siberian Branch Russian Academy of Sciences, Lavrentyev Institute of Hydrodynamics, Novosibirsk 630090, Russian Federation

²Tomsk State University, Research Institute of Applied Mathematics and Mechanics, Tomsk 634050, Russian Federation

³Troitsk Institute of Innovative and Thermonuclear Research, Troitsk, Moscow 142190, Russian Federation

13:45 PPC-O-18-2 Brush Rail Motors and EM Brushguns

Y. A. Dreizin, L. J. Lukis, D. Rebrov

General Electrodynamics International LLC, Long Lake, MN, United States

14:00 PPC-O-18-3 Electromagnetic Launch and Soft Catch Recovery of High Acceleration and Transient Field Test Articles

J. J. Hahne, D. D. Surls

Center for Electromechanics, University of Texas at Austin, Austin, Texas, United States

14:15 PPC-O-18-4 The Influences of Low Temperature on System Performance of Inductive Pulsed Power Supplies

J. Ding, X. Yu, Z. Li

Dept. Electrical Engineering, Tsinghua University, Beijing, China

14:30 PPC-O-18-5 Investigations on the Frictional Behavior of Electromagnetic Railgun Armatures

B. Wild, R. Wenske, D. Simicic, M. Schneider

French-German Research Institute of Saint-Louis, Saint-Louis, France

14:45 PPC-O-18-6 Frequency Response Analysis of a Rogowski Coil Transducer for Railgun Pulse Current Measurement

D. Y. Wang, Z. C. Wang, X. F. Sun, B. C. Wang

Key Lab of Power Electronics for Energy Conservation and Motor Drive of Hebei Province, YanShan University, Qinhuangdao, Hebei Province, China

15:00 PPC-O-18-7 The Relationship Between Inductor Parameters and Performances of the STRETCH Meat Grinder Pulse Power Supply

Z. Li, X. Yu, J. Ding

Department of Electrical Engineering, Tsinghua University, Beijing, China

15:15 PPC-O-18-8 The Points of a Spatial Parameter Stability of the Revolver Rail Guns in the Generator of Series Bust. Their Possible Solutions

O. G. Egorov

Atomic energy agency, TRINITI, Moscow, Troitsk, Russian Federation

15:30 PPC-O-18-9 Technique of Hyper-Velocity Flyer-Plates Launching Experiments on PTS

Z. Zhang

Institute of Fluid Physics, CAEP, Mianyang, China

15:45 PPC-O-18-10 Three Key Electromechanical Parameters about Electromagnetic Railgun

Q. -A. Lv

Dept. 3rd, Shijiazhuang Mechanical Engineering College, Shijiazhuang, Hebei, China

Session PPC-P-13: Compact and Explosive Pulsed Power - Poster

Poster Session

Wednesday, June 3, 16:00-17:30, Salon H

Session Chair: Andrew Young, Lawrence Livermore National Laboratory

PPC-P-13-1 EMP Footlocker: A Portable High-Power Electromagnetic Source for Mobile Platforms

C. Nunnally, J. R. Mayes, M. B. Lara, W. C. Nunnally, D. W. Kohlenberg, J. M. Byman

Applied Physical Electronics LC, Austin, TX, United States

PPC-P-13-2 Design of Compact High-Voltage Capacitor Charging Power Supply for Pulsed Power Applications

Y. Zhang¹, J. Wu¹, Z. Li¹, Y. Jin¹, H. Tian¹, W. Li², B. Li¹

¹National Key Laboratory of Transient Physics, Nanjing University of Science and Technology, NanJing, Jiang Su, China

²Nanjing Electronic Technology Research Institute, NanJing, Jiang Su, China

PPC-P-13-3 A Portable Mil-Std-188-125 E1 Test System

M. B. Lara, C. Nunnally, J. R. Mayes, D. Kohlenberg

Applied Physical Electronics, Spicewood, TX, United States

PPC-P-13-4 Analysis of Ion-Enhanced Cathode Currents: Effects of Barrier Thinning and Local Heating

R. P. Joshi¹, A. Majzoobi², H. Qiu³

¹Dept. Electrical & Comp. Engr., Texas Tech University, LUBBOCK, TX, United States

²Dept. Electrical & Comp. Engr., Old Dominion University, Norfolk, VA, United States

³Dept. Electrical Engineering, Fort Valley State University, Fort Valley, GA, United States

PPC-P-13-5 A Compact X-Pinch Generator for X-Ray Probing

F. Lassalle, B. Roques, A. Luyen, F. Zucchini, P. Combes

DAM, GRAMAT, CEA, GRAMAT, France

PPC-P-13-6 MECHANISMS OF DEPOLARIZATION OF Pb(Zr_{0.52}Ti_{0.48})O₃ AND Pb(Zr_{0.95}Ti_{0.05})O₃ FERROELECTRICS UNDER TRANSVERSE SHOCK COMPRESSION

S. I. Shkuratov¹, J. Baird¹, V. G. Antipov¹, E. F. Talantsev², H. Ryul³, J. C. Valadez³, C. S. Lynch³

¹*Loki Incorporated, Rolla, MO, United States*

²*Pulsed Power LLC, Lubbock, TX, United States*

³*Department of Mechanical and Aerospace Engineering, University of California at Los Angeles, Los Angeles, Los Angeles, CA, United States*

PPC-P-13-7 Development of the metal mine detection technology

A. L. Fan, Y. H. Sun, P. Yan

Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China

Session PPC-P-14: Diagnostics I - Poster

Poster Session

Wednesday, June 3, 16:00-17:30, Salon H

Session Chair: John Mankowski, Texas Tech University

PPC-P-14-8 Determination of the Temperature Variation of the Kerr Constant of Water: Preliminary Results

B. M. Novac¹, R. Ruscassie², M. Wang¹, A. deFeron², L. Pecastaing², P. Pignolet², I. R. Smith¹

¹*School of Electronic, Electrical and Systems Engineering, Loughborough University, Loughborough, United Kingdom*

²*SIAME, Pau University, Pau, France*

PPC-P-14-9 Development of an X-Ray Talbot-Lau Moire Deflectometer for Fast Density Profile Measurements of Dense Plasmas Generated by Beam-Target Interactions

D. J. Clayton¹, M. Berninger¹, A. Meidinger¹, D. Stutman², M. P. Valdivia²

¹*Los Alamos Operations, National Security Technologies, LLC, Los Alamos, NM, United States*

²*Department of Physics and Astronomy, Johns Hopkins University, Baltimore, MD, United States*

PPC-P-14-10 Development of the Differential Absorption Hard X-Ray (DAHX) Spectrometer at the Z Facility

K. S. Bell, C. A. Coverdale, D. Ampleford, L. A. McPherson, V. Harper-Slaboszewicz, C. Bourdon, J. E. Bailey, G. Loisel, M. Kernaghan, M. Sullivan, M. E. Cuneo

Sandia National Laboratories, Albuquerque, NM, United States

PPC-P-14-11 Design and Operation of a Two-Color Interferometer to Measure Plasma and Neutral Gas Densities in a Laser-Triggered Spark Gap Switch

J. F. Camacho¹, E. L. Ruden², M. T. Domonkos², A. Schmitt-Sody², A. Lucero³

¹*Leidos Inc., Albuquerque, NM, United States*

²*Directed Energy Directorate, Air Force Research Laboratory, Kirtland AFB, NM, United States*

³*Boeing, Albuquerque, NM, United States*

PPC-P-14-12 An Optical Scattering Experiment to Measure the Timing of X-Ray Converter Target Debris in the DARHT II Accelerator

J. B. Johnson¹, M. E. Schulze¹, J. E. Coleman¹, D. K. Frayer²

¹*WX-5, Los Alamos National Lab, Los Alamos, NM, United States*

²*National Security Technologies, LLC, Los Alamos, NM, United States*

PPC-P-14-13 The Profilometer for Ion Beams

S. Koreney, M. Musienko

Cyclotron & Chemistry, SIEMENS Healthcare, Knoxville, TN, United States

PPC-P-14-14 Hardware and Software Upgrades for the Saturn Data Acquisition Triggers and Time Base

S. K. Coffey, B. Lewis, N. Joseph, M. Torres, J. D. Salazar, E. Holman

1342, Sandia National Labs, Albuquerque, United States

PPC-P-14-15 Surface Current Density Distribution Measurements of an Electrically Exploded Foil via B-Dot Probe Array Data Inversion

E. L. Ruden¹, D. J. Amdahl¹, R. H. Cooksey¹, P. R. Robinson¹, F. T. Analla², D. J. Brown², M. R. Kostora², J. F. Camacho³,

V. Makhin⁴

¹*Directed Energy Directorate, Air Force Research Laboratory, KAFB, United States*

²*Leidos Engineering, Inc., Albuquerque, United States*

³*NumerEx, LLC, Albuquerque, United States*

⁴*TechFlow, Inc., Albuquerque, United States*

PPC-P-14-16 A Cost-Effective Rise-Time Calibration Pulse Generator Using a BJT in Avalanche Breakdown Mode
P. Norgard, S. D. Kovaleski

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

PPC-P-14-17 Comparison of High Resolution "balanced" and "Direct Conversion" Measurement of SwissFEL Resonant Kicker Amplitude
M. Paraliiev, C. Gough

Large Research Facilities, Paul Scherrer Institute, Villigen PSI, Switzerland

PPC-P-14-18 Application of Six-Port Directional Couplers for Pulsed Plasma Diagnostic Applications
A. Eroglu

Electrical and Computer Engineering, Purdue University Fort Wayne, Fort Wayne, IN, United States

PPC-P-14-19 Design of Four Port Impedance Probes for Plasma Applications
A. Eroglu

Electrical and Computer Engineering, Indiana University - Purdue University, Fort Wayne, United States

PPC-P-14-20 Ultra Linear High Speed Kilovolt Ramp Circuit
J. Barth

Barth Electronics, Inc., Boulder City, NV, United States

PPC-P-14-21 Comparisons of Frequency and Time Domain HV Probe Calibrations
R. J. Adler

North Star High Voltage, Marana, AZ, United States

Session PPC-P-15: Generators and PFNs - Poster II

Poster Session

Wednesday, June 3, 16:00-17:30, Salon H

Session Chair: Christopher Williams, UT Arlington

PPC-P-15-22 Connection Topology of Modular Pulsed Alternators
X. Li

Harbin Institute of Technology, Harbin, China

PPC-P-15-23 Discharge Torque and Gyroscopic Effects Compensation of Modular Pulsed Alternators
X. Li

Harbin Institute of Technology, Harbin, China

PPC-P-15-24 Pulse Power Systems for Plasma Experiments at General Fusion
B. Rablah, M. Laberge, W. Zawalski, J. Wilkie

General Fusion Inc., Burnaby, BC, Canada

PPC-P-15-25 Pulsed Power Source on the Basis of Helical EMG Applicable for X-Radiography and Proton Radiography
P. V. Duday, A. Y. Fevrarev, A. A. Zimenkov, N. S. Lutikova

Russian Federal Nuclear Center, Sarov, Russian Federation

PPC-P-15-26 Test Bench to Study Turbulent Mixing Processes
E. V. Shapovalov, B. E. Grinevich, A. V. Ivanovskiy, K. N. Klimushkin, A. I. Krayev, V. B. Kudelkin, Y. I. Mattsev,
S. M. Polyushko

Russian Federal Nuclear Center - VNIIEF, Sarov, Russian Federation

PPC-P-15-27 Design and Evaluation of a Solid State Folded Frozen Wave Generator
C. V. Hettler, G. F. Edmiston

Scientific Applications and Research Associates, Inc., Colorado Springs, CO, USA

PPC-P-15-28 Design and Construction of a Trigger Pulse Generator Based on Inductive Adders and Its Application
Y. Ge, F. Lin, L. Li, N. Ma, Y. Cheng

State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, Hubei Province, China

PPC-P-15-29 A Compact Solid-State Marx Generator for Emitters

B.-J. Lee¹, Y. K. Son¹, S. -H. Kim¹, H. -S. Kong¹, Y. Joo¹, W. Lee², Y. Hong², J. So², D. -S. Kim³, H. -J. Yun³, S. -H. Lee³, S. H. Nam⁴

¹*Pohang Accelerator Laboratory, Pohang, South Korea*

²*Agency for Defense Development, Daejeon, South Korea*

³*Dawonsys, Siheung-si, South Korea*

⁴*Korea Heavy Ion Medical Accelerator Project, KIRAMS, Seoul, South Korea*

PPC-P-15-30 Design of a PEF-Treatment Device for Experiments on Food Preparation

M. Sack¹, S. Keipert¹, D. Herzog¹, L. Song², G. Mueller¹

¹*Institute for Pulsed Power and Microwave Technology, Karlsruhe Institute of Technology, Karlsruhe, Germany*

²*National University of Defence Technology, Changsha, China*

PPC-P-15-31 Analysis of Coupled Magnetic Switches in a Magnetic Pulse Compression Network

A. O. Sheets¹, S. Leontsev², J. Horwath³, D. Schweickart³

¹*UES Inc, Dayton, USA*

²*UDRI, Dayton, USA*

³*Air Force Research Laboratory, Dayton, USA*

PPC-P-15-32 Silicon-Carbide (SiC) MOSFET-Based Full-Bridge for Pulsed Power Applications

J. Prager, T. Ziemba, K. E. Miller, J. Picard, A. Hashim

Eagle Harbor Technologies, Inc., Seattle, United States

PPC-P-15-33 Preliminary Results of the Pulsed Power Driven Damaged Surface Hydrodynamics Experiments

C. L. Rousculp, D. M. Oro, C. Morris, A. Saunders, W. A. Reass, J. R. Griego, P. J. Turchi, R. E. Reinovsky

Los Alamos National Laboratory, Los Alamos, NM, United States

Session PPC-P-16: Power Supplies and Modulators - Poster

Poster Session

Wednesday, June 3, 16:00-17:30, Salon H

Session Chair: Colt James, Pearson Electronics Inc.

PPC-P-16-34 Design, Construction, and Insulation Test of a 15 Millihenry Inductor for a Solid-State Buck Converter of a Gyrotron Cathode Power Supply

P. Huynh, J. F. Tooker

General Atomics, San Diego, CA, United States

PPC-P-16-35 High-Voltage Regulating-Frequency AC Power Supply Based on CAN Bus Communication Control

K. Liu¹, R. Fu¹, Y. Gao¹, Y. Sun^{1,2}, P. Yan^{1,2}

¹*Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China*

²*Key Laboratory of Power Electronics and Electric Drive, Chinese Academy of Sciences, Beijing, China*

PPC-P-16-36 A Piezoelectric Transformer-Driven High Voltage DC Power Source

P. Norgard, S. D. Kovaleski

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

PPC-P-16-37 High Voltage Power Supply for Electrode Test Stand

M. Slepchenkov, S. Abramov, S. Putvinski, P. Yushmanov, A. Sibley, M. Morehouse

Tri-Alpha Energy, Rancho Santa Margarita, CA, United States

PPC-P-16-38 The New Type AC Series-Resonant High Voltage Pulsed Power Supply

X. Xu

Institute of High Energy Physics (IHEP), the Chinese Academy of Sciences (CAS), Dongguan, Dongguan, China

PPC-P-16-39 AMPEGONS NOVEL SHORT PULSE MODULATOR FOR HIGH POWER MICROWAVE TUBES

G. Blokesch¹, D. Gerber², W. Kaesler¹, G. Boehm¹, J. Biela², M. Osemann¹, D. Kraemer¹, M. Frei³, A. Epp³, M. Bader³

¹*Ampegon, Dortmund, Germany*

²*HPE, ETH Zurich, Zurich, Switzerland*

³*Ampegon, Turgi, Switzerland*

PPC-P-16-40 Repetitive High Voltage Bipolar All-Solid-State Pulse Adder with Narrow Pulses Output

Y. Wang, K. Liu, J. Qiu

Fudan University, Shanghai, China

PPC-P-16-41 Solid-State Pulsed Power Modulator for Medical Linac Application

H. J. Ryoo¹, S. R. Jang¹, J. H. Seo²

¹*Electric Propulsion Research Division, KOREA ELECTROTECHNOLOGY RESEARCH INSTITUTE (KERI), Changwon, South Korea*

²*Energy & Power Conversion Engineering, University of Science & Technology, Changwon, South Korea*

PPC-P-16-42 Development of a High-Capacity, High-Voltage Capacitor Charging Power Supply Using IGBT for KEK BNCT Pulse Modulator

D. S. Kim

Dawonsys, Gyeonggi-do, South Korea

PPC-P-16-43 STATUS of a 140KV-150us-50HZ IGBT MARX MODULATOR

B. Cadilhon, B. Cassany, R. Pecquois

CEA DAM, Le Barp, France

PPC-P-16-44 Design of a 12.5 Kv, 250 A, Inductive Adder with Active Droop and Ripple Compensation for CLIC Damping Ring Kickers

J. Holma, M. J. Barnes

CERN, Geneva, Switzerland

PPC-P-16-45 Protective Networks for High Voltage Power Supplies for Pulsed Power Loads

M. G. Giesselmann, A. Bilbao

Electrical & Computer Engineering, Texas Tech University, Lubbock, Texas, United States

PPC-P-16-46 25 kV BIPOLAR SOLID-STATE MARX GENERATOR for INDUSTRIAL FOOD APPLICATIONS

L. Redondo^{1,2}, J. Santos², J. Afonso²

¹*Pulsed Power Advanced Applications Group, Engineering Superior Institute, GIAAPP/ISEL, Lisbon, Portugal*

²*EnergyPulse Systems, Lisbon, Portugal*

PPC-P-16-47 Design and Experimental Results of an Isolated DC-DC Converter with High-Output-Voltage

C. C. Motta¹, T. B. Lazzarrin², I. Barbi²

¹*University of Sao Paulo - USP, Sao Paulo, SP, Brazil*

²*Federal University of Santa Catarina - UFSC, Florianopolis, SC, Brazil*

Session PPC-P-17: X and Z Pinches, X-Ray Lasers, Radiation Sources - Poster

Poster Session

Wednesday, June 3, 16:00-17:30, Salon H

Session Chair: Joshua Leckbee, Sandia National Laboratories

PPC-P-17-48 Short-Circuit Test Data of a new 2-LTD-Bricks X-Pinch Driver at the Idaho Accelerator Center

R. V. Shapovalov, R. V. Spielman

Idaho Accelerator Center, Pocatello, United States

PPC-P-17-49 Characterization of a MA-Class Linear Transformer Driver for Foil Ablation and Z-Pinch Experiments

A. M. Steiner, S. G. Patel, D. A. Yager-Elorriaga, N. M. Jordan, R. M. Gilgenbach, Y. Y. Lau

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

PPC-P-17-50 Recent Wire Array Z Pinch Experiments on the PTS Facility

E. Ye¹, Q. Hu¹, J. Ning¹, J. Yang¹, R. Xu¹, Z. Li¹, C. Xue², D. Xiao²

¹*Institute of Nuclear Physics and Chemistry, Mianyang, China*

²*Institute of Applied Physics and Computational Mathematics, Beijing, China*

PPC-P-17-51 Test of a Single-Stage 1-MV Prototype Induction Voltage Cavity

H. Wei¹, F. Sun², T. Liang², A. Qiu¹, P. Cong², X. Jiang², Z. Wang², J. Yin¹

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

²*State Key Laboratory of Intense Pulsed Radiation Simulation and Effect, Northwest Institute of Nuclear Technology, Xi'an, China*

PPC-P-17-52 The Internal Penning Ion Source of Negative Hydrogen Ions for Isochronous Cyclotrons

S. Korenev

Cyclotron & Chemistry, SIEMENS Healthcare, Knoxville, TN, United States

PPC-P-17-53 X-Ray Shielding Estimations for a Rep-Rate High Power Microwave Accelerator

H. Yang, T. Xun, J. Gao

College of Opto-electronics Science and Engineering, National University of Defense Technology, Changsha, China

Session PPC-Plen-4: Thursday Plenary

Thursday, June 4, 08:00-09:15, Salon F

Session Chair: Mark Sinclair, Atomic Weapons Establishment

8:00 PPC-Plen-4-1 Research Activities on High-power Microwave Sources

J. Zhang, J. Zhang, J. He, Y. Fan, X. Zhang, Z. Li, X. Ge, Z. Jin, L. Gao, J. Ling, Z. Qi, L. Song

Laboratory of High Power Microwave Technology, National University of Defense Technology, Changsha, China

Session PPC-O-19: Metamaterials for HPM Applications

Thursday, June 4, 09:45-12:15, Salon G

Session Chair: Alexander Vlasov, Naval Research Laboratory

9:45 PPC-O-19-1 (invited) High Power Microwave Sources Using 2d Periodic Structures - Similarities with Metamaterial Structures

E. Schamiloglu, M. I. Fuks, S. Prasad, S. C. Yurt, M. A. Gilmore, S. Portillo, T. Wynkoop

Department of Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, United States

10:15 PPC-O-19-2 High Efficiency X Band BWO with an Inhomogeneous Slow Wave Structure

U. Chipengo, J. L. Volakis

Electrical Engineering, The Ohio State University, Columbus Ohio, United States

10:30 PPC-O-19-3 Design of Slow Wave Structures for High Power Oscillators and Amplifiers Using Grounded Metamaterial Architectures

R. Lipton, A. Polizzi, L. Thakur

Department of Mathematics and Institute for Advanced Materials, Louisiana State University, Baton Rouge, LA, United States

10:45 PPC-O-19-4 Radiation and Wakefield Generation of a Relativistic Electron Beam in a Volumetric Metamaterial Structure

X. Lu, M. A. Shapiro, R. J. Temkin

PSFC, MIT, Cambridge, MA, United States

11:00 PPC-O-19-5 Design and Experimental Test of a High Power S-Band Microwave Source Using a Metamaterial Loaded Cavity

J. S. Hummelt, H. Xu, M. A. Shapiro, R. J. Temkin

PSFC, MIT, Cambridge, MA, United States

11:15 PPC-O-19-6 Experimental Plan for Split Ring Resonator Type Slow Wave Structure with Double Negative Properties for High Power Microwave Generation

S. Prasad, S. Yurt, S. Portillo, J. Buchenauer, M. Fuks, E. Schamiloglu

Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, United States

11:30 PPC-O-19-7 Temporal Response of Split Ring Resonators in Waveguide Exhibiting Negative Permeability
M. A. Hmaidj, T. Wynkoop, M. Gilmore, A. G. Lynn

University of New Mexico, Albuquerque, NM, United States

11:45 PPC-O-19-8 HPM Metamaterial-Based Phase Shifter

H. Seidfaraji, G. Atmatzakis, C. Christodoulou

Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, United States

12:00 PPC-O-19-9 Giant Gain in Traveling Wave Tubes Operating near the Degenerate Band Edge Condition

M. A. K. Othman¹, M. Veysi¹, F. Capolino¹, A. Figotin²

¹*Department of Electrical Engineering and Computer Science, University of California, Irvine, Irvine, United States*

²*Department of Mathematics, University of California, Irvine, Irvine, United States*

Session PPC-O-20: Prime Power and High Energy Density Storage

Thursday, June 4, 09:45-12:15, Salon F

Session Chair: John Heinzl, NSWC Philadelphia

9:45 PPC-O-20-1 Development of Metallized Polypropylene Capacitor Reliability in Pulse Power Systems

R. L. Thomas¹, T. R. Jow¹, S. Scozzie¹, J. R. McDonald², M. Schalnat², M. Schneider²

¹*Army Research Laboratory, Adelphi, MD, United States*

²*General Atomics, San Diego, CA, United States*

10:00 PPC-O-20-2 High Rate Comparison of Lithium-Ion, Valve Regulated Lead Acid, and Nickel Metal Hydride Batteries for Use in Pulsed Power Applications

C. L. Williams¹, M. J. Martin¹, D. A. Wetz¹, K. Mckinzie¹, J. Cohen¹, N. Martinez¹, J. M. Heinzl²

¹*Electrical Engineering Department, University of Texas at Arlington, Arlington, TX, United States*

²*Carderock Division, Naval Surface Warfare Center, Philadelphia, PA, United States*

10:15 PPC-O-20-3 (invited) Pulsed Power Capacitors Development and Outlook

T. R. Jow¹, F. W. MacDougall², C. J. Scozzie¹, J. D. White³, J. S. Ho¹, X. H. Yang⁴, J. B. Ennis⁵, J. R. MacDonald⁶,

M. A. Schneider⁶, M. C. Schalnat⁶, R. A. Cooper⁶, S. P. S. Yen⁷

¹*U.S. Army Research Laboratory, Adelphi, MD, United States*

²*Consultant, San Diego, CA, United States*

³*U.S. Army TARDEC, Warren, MI, United States*

⁴*CSI Technologies, Vista, CA, United States*

⁵*NWL Capacitors, Riviera Beach, FL, United States*

⁶*General Atomics, San Diego, CA, United States*

⁷*Jet Propulsion Laboratory, Pasadena, CA, United States*

10:45 PPC-O-20-4 Simulation of Voltage-Maintaining Performance of High Energy Density Capacitors Based on the Measurement of Charging Current

W. Wang, H. Li, Z. Li, H. Li, F. Lin

School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China

11:00 PPC-O-20-5 (invited) Burst Mode Operation of a High Peak Power High Pulse Repetition Rate Capacitor Charging Power Supply

S. L. Holt¹, E. S. Cordero¹, C. F. Lynn¹, J. M. Parson¹, J. C. Dickens¹, A. A. Neuber¹, J. J. Mankowski¹, S. E. Calico²,

M. C. Scott²

¹*Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, USA*

²*Missiles and Fire Control, Lockheed Martin Corporation, Grand Prairie, TX, USA*

11:30 PPC-O-20-6 The Influence of High C Rate Pulsed Discharge on Lithium-Ion Battery Cell Degradation

D. N. Wong¹, D. A. Wetz², M. J. Martin², J. M. Heinzl³, A. Mansour³

¹Materials Science and Engineering Department, University of Texas at Arlington, Arlington, TX, United States

²Electrical Engineering Department, University of Texas at Arlington, Alrington, TX, United States

³Carderock Division, Naval Surface Warfare Center, Philadelphia, PA, United States

11:45 PPC-O-20-7 Evaluation of an Actively Contolled Battery-Capacitor Hybrid Energy Storage Module (hesm) for Use in Driving Pulsed Power Applications

C. S. Westenhover¹, I. J. Cohen¹, D. A. Wetz¹, J. M. Heinzel², Q. Dong²

¹Electrical Engineering Department, University of Texas at Arlington, Arlington, TX, United States

²Carderock Division, Naval Surface Warfare Center, Philadelphia, PA, United States

12:00 PPC-O-20-8 Applications of Sub-Microsecond Pulsed Power Supply on Polytetrafluoroethylene Films Surface Treatment

X. Li^{1,2}, J. Li^{1,2}, P. Dong^{1,2}, Y. T. Xie^{1,2}, L. W. Zhang^{1,2}, J. D. Long^{1,2}

¹China Academy of Engineering Physics, Institute of Fluid Physics, Mianyang, Sichuan Province, China

²China Academy of Engineering Physics, Key Laboratory of Pulsed Power, China Academy of Engineering Physics, China

Session PPC-O-21: Solid State Switches

Thursday, June 4, 09:45-12:15, 615 AB

Session Chair: Susan Heidger, Kirkland Air Force Research Laboratories

9:45 PPC-O-21-1 Solid State Linear Transformer Driver (LTD) Development Based on a Novel Thyristor-Type Switch Model

M. B. Walls, L. B. Collier, A. Fierro, J. Dickens, J. Mankowski, A. Neuber

Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States

10:00 PPC-O-21-2 Investigation of a Combined Pcss and Magnetic Switch Triggered by Laser Diode

H. Liu, J. Yuan, X. Ma, P. Jiang, L. Wang, M. Wang, W. Xie

Key Laboratory of Pulsed Power, Institute of Fluid Physics, CAEP, Mianyang, Sichuan, China

10:15 PPC-O-21-3 A Solid State HV Test Stand for Simulated Lifetime Analysis of Electric Components

A. B. Howard¹, R. D. Curry¹, N. D. Kallas¹, K. A. O'Connor¹, E. Loree²

¹Electrical and Computer Engineering, University of Missouri-Columbia, Columbia, MO, United States

²Loree Engineering, Albuquerque, NM, United States

10:30 PPC-O-21-4 Thyratron Replacement for the Spallation Neutron Source Linac Extraction Kicker PFN System

R. B. Saethre¹, H. D. Sanders², B. Morris¹

¹Neutron Sciences/ Research Accelerator Division, Oak Ridge National Lab, Oak Ridge, TN, United States

²Solid State Switch Division, Applied Pulsed Power, Inc., Batavia, IL, United States

10:45 PPC-O-21-5 Development and Research of Heavy Pulse Current Ltt Switch

R. A. Serebrov¹, B. E. Fridman¹, A. A. Rhapugin², V. A. Martynenko²

¹STC "SINTEZ", D.V. Efremov Scientific Research Institute of Electrophysical Apparatus, St.-Petersburg, Russian Federation

²JSC "Electrovipryamitel", Saransk, Russian Federation

11:00 PPC-O-21-6 High-Voltage Subnanosecond Avalanche Shaperning Diodes: a Comparative Study of Silicon and Gallium Arsenide Structures

P. Rodin, V. Brulevskij, I. Smirnova, A. Rozkhov, P. Brunkov, I. Grekhov

Ioffe Physicstechnical Institute of Russian Academy of Sciences, Saint-Petersburg, Russian Federation

11:15 PPC-O-21-7 (invited) Pulsed Power Systems for ESS Klystrons

M. Kempkes

Diversified Technologies Inc., Bedford, MA, United States

11:45 PPC-O-21-8 Analysis of GaN Power MOSFET Exposure to Pulsed Overcurrents

W. B. Ray II, J. A. Schrock, A. Bilbao, M. Kelley, S. Lacouture, E. Hirsch, S. B. Bayne

Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

12:00 PPC-O-21-9 Evaluation of 20-kV Silicon Carbide IGBTs for Pulsed-Power Marx Generator

M. Hinojosa, H. K. O'Brien, C. J. Scozzie

Power Conditioning, Army Research Laboratory, Adelphi, MD, United States