Stanford

Juan Rivas-Davila

Associate Professor of Electrical Engineering and Senior Fellow at the Precourt Institute for Energy

Bio

BIO

Juan Rivas is an Associate Professor at Stanford's Electrical Engineering department. Before, he worked for GE Global Research in the high-frequency power electronics group. He has extensive experience in the design of dc-dc power converters working at MHz frequencies. He has published peer-reviewed work on power converters reaching up to 100 MHz using Si and WBG devices. He obtained his doctoral degree from MIT in 2006. His research interests include power electronics, resonant converters, resonant gate drive techniques, high-frequency magnetics, and finding new applications for power converters

ACADEMIC APPOINTMENTS

- Associate Professor, Electrical Engineering
- Senior Fellow, Precourt Institute for Energy
- Member, Cardiovascular Institute
- Member, Wu Tsai Neurosciences Institute

HONORS AND AWARDS

- Best Paper: HF Bidirectional Resonant Converter for High Conversion Ratio & Variable Load Operation, Control and Modeling for Power Electronics Workshop (2018)
- Faculty Early Career Development (CAREER) Program", National Science Foundation (2013)
- Best Paper Award: "13.56 MHz high voltage multi-level resonant DC-DC converter", Control and Modeling for Power Electronics Workshop (2015)
- Transactions Paper Award: "Resistance Compression Networks for Radio-Frequency Power conversion", IEEE Power Electronics Society (2007)
- 2nd Prize Award: High Frequency Resonant SEPIC Converter With Wide Input and Output Voltage Ranges", IEEE Power Electronics Society (2012)

PROGRAM AFFILIATIONS

- Stanford SystemX Alliance

PROFESSIONAL EDUCATION

- B.A., ITESM, Mexico City Campus , Electrical and Communications Engineering (1998)
- S.M., Massachusetts Institute of Technology , Output Power Increase at Idle Speed in Alternators (2003)
- Sc.D., Massachusetts Institute of Technology , Radio Frequency dc-dc Power Conversion (2006)

PATENTS

- Juan M. Rivas Davila, Wei Liang, Luke C. Raymond. "United States Patent US11,031,179B2 Passive Components For Electronic Circuits Using Conformal Deposition on a Scaffold", The Board of Trustees of the Leland Stanford Junior University, Jun 8, 2021
- Luke C. Raymond, Wei Liang, Juan M. Rivas Davila. "United States Patent US10218276B2 Isolated Multi-Level Resonant Topologies for Wide-Range Power Conversion and Impedance Matching", Leland Stanford Junior University, Feb 26, 2019

- John R. Goscha, Victor D. Roberts, Juan Manuel Rivas-Davila, Luke Christopher Raymond. "United States Patent 9,305,765B2 High frequency induction lighting", Lucidity Lights, Inc., Apr 5, 2016
- Juan Manuel Rivas Davila, Randall Henry Buchwald. "United States Patent 8,829,905 B2 Magnetic resonance imaging compatible switched mode power supply", General Electric Company, Sep 9, 2014
- Juan Manuel Rivas Davila, Ljubisa Dragoljub Stevanovic, Juan Antonio Sabate. "United States Patent 8,760,164 Magnetic resonant imaging gradient driver architecture", General Electric Company, Jun 24, 2014
- Satish Prabhakaran, John Stanley Glaser, Ljubisa Dragoljub Stevanovic, Juan Manuel Rivas Davila. "United States Patent US 8567046 B2 Methods for making magnetic components", General Electric Company, Oct 29, 2013
- Rixin Lai, Luis Jose Garces, Juan Antonio Sabate, Juan Manuel Rivas Davila, Song Chi, Wesley Michael Skeffington,. "United States Patent US 8502539 B2 Gradient amplifier system", General Electric Company, Jul 31, 2013
- Mehmet Arik, Tunc Icoz, Juan Manuel Rivas Davila, Charles Erklin Seeley, Yogen Vishwas Utturkar, Stanton Earl Weaver, Jr.. "United States Patent US 8496049 B2 Heat sinks with distributed and integrated jet cooling", General Electric Company, Jul 30, 2013
- John Stanley Glaser, Juan Manuel Rivas Davila. "United States Patent US 7924580 B2 Switching inverters and converters for power conversion", General Electric Company, Apr 12, 2011
- David J. Perreault, Juan M. Rivas, Anthony D. Sagneri, Olivia Leitermann, Yehui Han, Robert C. N. Pilawa-Podgurski,. "United States Patent 7,889,519 B2 Methods and apparatus for a resonant converter", Massachusetts Institute Of Technology, Feb 15, 2011
- David J. Perreault, Juan M. Rivas, Yehui Han, Olivia Leitermann. "United States Patent 7535133 B2 Methods and apparatus for resistance compression networks", Massachusetts Institute Of Technology, May 19, 2009

LINKS

- SUPER-Lab: http://superlab.stanford.edu/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Modern applications are driving demand for power systems with capabilities beyond what is presently achievable. High performance systems, like medical imaging systems and other applications impose challenging specifications on power density and bandwidth that are difficult to achieve with current circuit topologies. Power density can be improved with better semiconductor components and passive elements, and by reducing the energy storage requirements of the system. By dramatically increasing the switching frequency, it is possible to reduce the energy storage requirements and improve bandwidth. I'm interested in the development of system architectures and circuit topologies for dc-ac and dc-dc power conversion that can reach switching frequencies of 10’s to 100’s of MHz. Switching at these frequencies will lead to efficient converters with inductors and transformers having no magnetic material to limit their high frequency performance, and with small-valued capacitors.

At these switching frequencies, all inductors can be air-cored, eliminating core losses, saturation, and extending their operating temperature range. I have been involved in the development of dc-dc converter that archives a significant reduction in peak switch voltage stress, requires small passive components with low energy storage, and provides the capability for extremely rapid startup and shutdown.

Another goal of my work is to implement a value-added strategy in inexpensive printed circuit boards (PCB) by fabricating all passive devices of a power converter (inductors and capacitors) with traces, transforming the PCB into a 3-D resonant structure. This approach will eliminate tuning and component variation while simultaneously maintaining extraordinary levels of performance at reduced cost. Moreover, there a lot of exciting applications for these high frequency circuits.

Teaching

COURSES

2021-22

- Advanced Topics in Power Electronics: EE 254 (Win)
- Magnetics Design in Power Electronics: EE 356B (Spr)
- Power Electronics: EE 153, EE 253 (Aut)

2020-21

- Advanced Topics in Power Electronics: EE 254 (Win)
- Introductory Research Seminar in Electrical Engineering: EE 301 (Aut, Sum)
- Power Electronics: EE 153, EE 253 (Aut)
- Resonant Converters: EE 356A (Spr)

2019-20

- Advanced Topics in Power Electronics: EE 254 (Spr)
- Power Electronics: EE 153, EE 253 (Win)
- Resonant Converters: EE 356A (Aut)

2018-19

- Magnetics Design in Power Electronics: EE 356B (Aut)
- Power Electronics: EE 153, EE 253 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Qian Dong, Aaron Goldin, Gift Nyikayaramba, Ahmed Sawaby, Christopher Vassos, Gustavo Vianna Cezar, Xinyi Wen, Yinuo Xu

Postdoctoral Faculty Sponsor

Kawin Surakitbovorn

Doctoral Dissertation Advisor (AC)

Weston Braun, Calvin Lin, Eric Stolt, Zikang Tong, Zhechi Ye, Jia Zhuang

Master's Program Advisor

Ryan Johnston, Jeff McElfresh, Alex Moraru, Daniel Polansky

Doctoral (Program)

Weston Braun, Geneva Ecola, Calvin Lin, Rachel Luo, Gift Nyikayaramba, Carla Pinzon, Eric Stolt, Lyne Tchapmi P., Zhechi Ye, Jia Zhuang

Publications

PUBLICATIONS

- **Wideband PPT Class Phi(2) Inverter Using Phase-Switched Impedance Modulation and Reactance Compensation** *IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS*
  Tong, Z., Gu, L., Rivas-Davila, J.
  2022; 69 (6): 5724-5734
- **Real-time Selective Harmonic Minimization Using a Hybrid Analog/Digital Computing Method** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Poon, J., Sinha, M., Dhople, S. V., Rivas-Davila, J.
  2022; 37 (5): 5078-5088
- **A Simple Method to Combine the Output Power From Multiple Class-E Power Amplifiers** *IEEE JOURNAL OF EMERGING AND SELECTED TOPICS IN POWER ELECTRONICS*
  Surakitbovorn, K., Rivas-Davila, J. M.
  2022; 10 (2): 2245-2253
- **Class DE Switch-Mode Power Amplifier Using GaN Power HEMTs** *IEEE MICROWAVE MAGAZINE*
  Tong, Z., Ye, Z., Rivas-Davila, J.
  2022; 23 (3): 72-79

- **1 kW MHz Wideband Class E Power Amplifier** *IEEE OPEN JOURNAL OF POWER ELECTRONICS*
  Xu, J., Tong, Z., Rivas-Davila, J.
  2022; 3: 84-92
- **Plasma-fixated nitrogen as fertilizer for turf grass** *RSC ADVANCES*
  Sze, C., Wang, B., Xu, J., Rivas-Davila, J., Cappelli, M. A.
  2021; 11 (60): 37886-37895
- **Origins of Soft-Switching C-oss Losses in SiC Power MOSFETs and Diodes for Resonant Converter Applications** *IEEE JOURNAL OF EMERGING AND SELECTED TOPICS IN POWER ELECTRONICS*
  Tong, Z., Roig-Guitart, J., Neyer, T., Plummer, J. D., Rivas-Davila, J. M.
  2021; 9 (4): 4082-4095
- **Decentralized Carrier Phase Shifting for Optimal Harmonic Minimization in Asymmetric Parallel-Connected Inverters** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Poon, J., Johnson, B., Dhople, S. V., Rivas-Davila, J.
  2021; 36 (5): 5915–25
- **Small- and Large-Signal Dynamic Output Capacitance and Energy Loss in GaN-on-Si Power HEMTs** *IEEE TRANSACTIONS ON ELECTRON DEVICES*
  Zhuang, J., Zulauf, G., Roig-Guitart, J., Plummer, J., Rivas, J.
  2021; 68 (4): 1819–26
- **6.78-MHz Wireless Power Transfer With Self-Resonant Coils at 95% DC-DC Efficiency** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Gu, L., Zulauf, G., Stein, A., Kyaw, P., Chen, T., Davila, J.
  2021; 36 (3): 2456–60
- **Time and voltage domain load models for appliance-level grid edge simulation and control** *ELECTRIC POWER SYSTEMS RESEARCH*
  Goldin, A., Buechler, E., Rajagopal, R., Rivas-Davila, J.
  2021; 190
- **Fixed-Frequency Control of Piezoelectric Resonator DC-DC Converters for Spurious Mode Avoidance** *IEEE OPEN JOURNAL OF POWER ELECTRONICS*
  Stolt, E., Braun, W. D., Gu, L., Segovia-Fernandez, J., Chakraborty, S., Lu, R., Rivas-Davila, J.
  2021; 2: 582-590
- **Real-time Selective Harmonic Minimization using Hybrid Analog/Digital Computing**
  Poon, J., Sinha, M., Dhople, S., Rivas-Davila, J., IEEE
  IEEE.2021: 1041-1046
- **1.7 kW 6.78 MHz Wireless Power Transfer with Air-Core Coils at 95.7% DC-DC Efficiency**
  Gu, L., Rivas-Davila, J., IEEE
  IEEE.2021
- **Push-Pull Class Phi(2) RF Power Amplifier** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Gu, L., Zulauf, G., Zhang, Z., Chakraborty, S., Rivas-Davila, J.
  2020; 35 (10): 10515–31
- **Effect of Class 2 Ceramic Capacitor Variations on Switched-Capacitor and Resonant Switched-Capacitor Converters** *IEEE JOURNAL OF EMERGING AND SELECTED TOPICS IN POWER ELECTRONICS*
  Xu, J., Gu, L., Rivas-Davila, J.
  2020; 8 (3): 2268–75
- **A Method to Eliminate Discrete Inductors in a Class-E Inverter Used in Wireless Power Transfer Applications** *IEEE JOURNAL OF EMERGING AND SELECTED TOPICS IN POWER ELECTRONICS*
  Surakitbovorn, K., Rivas-Davila, J. M.
  2020; 8 (3): 2167–78
- **High-Frequency Bidirectional Resonant Converter for High Conversion Ratio and Variable Load Operation**
  Gu, L., Surakitbovorn, K., Zulauf, G., Chakraborty, S., Rivas-Davila, J.
  IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2020: 1983–93

- **Design and Fabrication of Three-Dimensional Printed Air-Core Transformers for High-Frequency Power Applications** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Tong, Z., Braun, W. D., Rivas-Davila, J.
  2020; 35 (8): 8472–89
- **Lightweight High Voltage Generator for Untethered Electroadhesive Perching of Micro Air Vehicles** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Park, S., Drew, D. S., Follmer, S., Rivas-Davila, J.
  2020; 5 (3): 4485–92
- **Cascode GaN/SiC: A Wide-Bandgap Heterogenous Power Device for High-Frequency Applications** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Xu, J., Gu, L., Ye, Z., Kargarrazi, S., Rivas-Davila, J.
  2020; 35 (6): 6340–49
- **On the Optimization of a Class-E Power Amplifier With GaN HEMTs at Megahertz Operation** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Surakitbovorn, K., Rivas-Davila, J. M.
  2020; 35 (4): 4009–23
- **Single-Turn Air-Core Coils for High-Frequency Inductive Wireless Power Transfer** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Zulauf, G., Rivas-Davila, J. M.
  2020; 35 (3): 2917–32
- **A Hybrid Cockcroft-Walton/Dickson Multiplier for High Voltage Generation** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Park, S., Yang, J., Rivas-Davila, J.
  2020; 35 (3): 2714–23
- **A Multiresonant Gate Driver for High-Frequency Resonant Converters** *IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS*
  Gu, L., Tong, Z., Liang, W., Rivas-Davila, J.
  2020; 67 (2): 1405–14
- **Inductorless Soft Switching DC-DC Converter with an Optimized Piezoelectric Resonator**
  Braun, W. D., Tong, Z., Rivas-Davila, J., IEEE
  IEEE.2020: 2272–78
- **Low-Ripple High-Voltage DC Generation Using a Serially Segmented Multiphase Voltage Multiplier**
  Park, S., Rivas-Davila, J., IEEE
  IEEE.2020: 962-968
- **A physical investigation of large-signal dynamic output capacitance and energy loss in GaN-on-Si power HEMTs at high-frequency applications**
  Zhuang, J., Zulauf, G., Roig, J., Plummer, J. D., Rivas-Davila, J., IEEE
  IEEE.2020: 189-194
- **The Impact of Multi-MHz Switching Frequencies on Dynamic On-Resistance in GaN-on-Si HEMTs** *IEEE OPEN JOURNAL OF POWER ELECTRONICS*
  Zulauf, G., Guacci, M., Rivas-Davila, J. M., Kolar, J. W.
  2020; 1: 210-215
- **Modular ON/OFF and Phase-Shifting for High-Speed Radio Frequency Power Modulation** *IEEE OPEN JOURNAL OF POWER ELECTRONICS*
  Surakitbovorn, K., Rivas-Davila, J. M.
  2020; 1: 393-406
- **1 kW, Multi-MHz Wireless Charging for Electric Transportation**
  Phan, T., Zulauf, G., Fan, J. A., Rivas-Davila, J. M., IEEE
  IEEE.2020: 795-801
- **Design and Optimization of 6.78 MHz Wireless Power Transfer with Self-Resonant Coils**
  Gu, L., Zulauf, G., Stein, A., Kyaw, P., Chen, T., Rivas-Davila, J. M., IEEE
  IEEE.2020: 379-383
- **Demonstration of GaN Impact Ionization Avalanche Transit-Time (IMPATT) Diode**
  Ji, D., Ercan, B., Zhuang, J., Gu, L., Rivas-Davila, J., Chowdhury, S., IEEE
  IEEE.2020

- **On the Techniques to Utilize SiC Power Devices in High- and Very High-Frequency Power Converters** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Tong, Z., Gu, L., Ye, Z., Surakitbovorn, K., Rivas-Davila, J.
  2019; 34 (12): 12181–92
- **Output Capacitance Loss Characterization of Silicon Carbide Schottky Diodes** *IEEE JOURNAL OF EMERGING AND SELECTED TOPICS IN POWER ELECTRONICS*
  Tong, Z., Zulauf, G., Xu, J., Plummer, A. D., Rivas-Davila, J.
  2019; 7 (2): 865–78
- **Implementing an Impedance Compression Network to Compensate for Misalignments in a Wireless Power Transfer System** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Choi, J., Xu, J., Makhoul, R., Davila, J.
  2019; 34 (5): 4173–84
- **Empirical Circuit Model for Output Capacitance Losses in Silicon Carbide Power Devices**
  Tong, Z., Park, S., Rivas-Davila, J., IEEE
  IEEE.2019: 998–1003
- **Miniature High-Voltage DC-DC Power Converters for Space and Micro-Robotic Applications**
  Park, S., Goldin, A., Rivas-Davila, J., IEEE
  IEEE.2019: 2007–14
- **Gate Drive for Very Fast Resonant Conversion using SiC Switch**
  Tong, Z., Gu, L., Surakitbovorn, K., Rivas-Davila, J. M., IEEE
  IEEE.2019: 6647–54
- **An Investigation into the Causes of C-OSS Losses in GaN-on-Si HEMTs**
  Zhuang, J., Zulauf, G., Roig, J., Plummer, J. D., Rivas-Davila, J., IEEE
  IEEE.2019
- **3-D Printed Air-Core Toroidal Transformer for High-Frequency Power Conversion**
  Tong, Z., Braun, W. D., Rivas-Davila, J. M., IEEE
  IEEE.2019
- **A Compact 45 V-to-54 kV Modular DC-DC Converter**
  Park, S., Gu, L., Rivas-Davila, J., IEEE
  IEEE.2019
- **On the Optimal Input Voltage of a Class-E Power Amplifier with GaN HEMTs at MHz Frequency Operation**
  Surakitbovorn, K., Gu, L., Rivas-Davila, J., IEEE
  IEEE.2019
- **MRI Compatible DC Modulator for an Envelope Tracking Transmitter**
  Braun, W. D., Gu, L., Scott, G., Rivas-Davila, J., IEEE
  IEEE.2019
- **Low Loss Gate Driving''Techniques of the Cascode GaN/SiC Power Device at High Frequencies**
  Xu, J., Gu, L., Rivas-Davila, J., IEEE
  IEEE.2019
- **Compact Fast-Switching DC and Resonant RF Drivers for a Dual-Mode Imaging and HIFU 2D CMUT Array**
  Stedman, Q., Gu, L., Pai, C., Rasmussen, M., Brenner, K., Ma, B., Ergun, A., Davila, J., Khuri-Yakub, B., IEEE
  IEEE.2019: 1951–54
- **Cascode GaN/SiC Power Device for MHz Switching**
  Xu, J., Gu, L., Ye, Z., Kargarrazi, S., Rivas-Davila, J., IEEE
  IEEE.2019: 2780–85
- **Duty Cycle and Frequency Modulations in Class-E DC-DC Converters for a Wide Range of Input and Output Voltages** *IEEE TRANSACTIONS ON POWER ELECTRONICS*

Park, S., Rivas-Davila, J.
2018; 33 (12): 10524–38

- **C-OSS Losses in 600 V GaN Power Semiconductors in Soft-Switched, High- and Very-High-Frequency Power Converters** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Zulauf, G., Park, S., Liang, W., Surakitbovorn, K., Rivas-Davila, J.
  2018; 33 (12): 10748–63
- **A Wide-Input-Range High-Efficiency Step-Down Power Factor Correction Converter Using a Variable Frequency Multiplier Technique** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Gu, L., Liang, W., Praglin, M., Chakraborty, S., Rivas-Davila, J.
  2018; 33 (11): 9399–9411
- **An Integrated RF Power Delivery and Plasma Micro-Thruster System for Nano-Satellites** *FRONTIERS IN PHYSICS*
  Liang, W., Charles, C., Raymond, L., Stuchbery, A., Surakitbovorn, K., Gu, L., Boswell, R., Rivas-Davila, J.
  2018; 6
- **Design of a Class-DE Rectifier with Shunt Inductance and Nonlinear Capacitance for High-Voltage Conversion** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Park, S., Rivas, J. M.
  2018; 33 (3): 2282–94
- **Active Power Device Selection in High- and Very-High-Frequency Power Converters** *IEEE Transactions on Power Electronics*
  Zulauf, G. D., Tong, Z., Plummer, J. D., Rivas-Davila, J. M.
  2018: 1
- **Design of a GaN-Based Wireless Power Transfer System at 13.56 MHz to Replace Conventional Wired Connection in a Vehicle**
  Surakitbovorn, K., Rivas-Davilla, J., IEEE
  IEEE.2018: 3848–54
- **FPGA-based Dynamic Duty Cycle and Frequency Controller for a Class-E-2 DC-DC Converter**
  Park, S., Rivas-Davila, J., IEEE
  IEEE.2018: 282–88
- **High-Frequency Resonant Converter with Synchronous Rectification for High Conversion Ratio and Variable Load Operation**
  Gu, L., Surakitbovorn, K., Rivas-Davila, J., IEEE
  IEEE.2018: 632–38
- **COSS Measurements for Superjunction MOSFETs: Limitations and Opportunities** *IEEE Transactions on Electron Devices*
  Zulauf, G. D., Roig-Guitart, J., Plummer, J. D., Rivas-Davila, J. M.
  2018: 1-7
- **A Wide Input Range Isolated Stacked Resonant Switched-Capacitor dc-dc Converter for High Conversion Ratios**
  Li, Y., Gu, L., Hariya, A., Ishizuka, Y., Rivas-Davila, J., Sanders, S., IEEE
  IEEE.2018
- **Designing a 40.68 MHz power-combining resonant inverter with eGaN FETs for plasma generation**
  Choi, J., Ooue, Y., Furukawa, N., Rivas, J., IEEE
  IEEE.2018: 1322–27
- **Substrate Bias Effect on E-Mode GaN-on-Si HEMT COSS Losses**
  Zhuang, J., Zulauf, G., Rivas-Davila, J., IEEE
  IEEE.2018: 130–33
- **Estimating the Reliability of Series-Connected Schottky Diodes for High-Frequency Rectification**
  Park, S., Zulauf, G., Rivas-Davila, J., IEEE
  IEEE.2018
- **Considerations for Active Power Device Selection in High- and Very-High-Frequency Power Converters**
  Zulauf, G., Tong, Z., Rivas-Davila, J., IEEE
  IEEE.2018

- **Design of a 13.56 MHz dc-to-dc resonant converter using an impedance compression network to mitigate misalignments in a wireless power transfer system**
  Choi, J., Xu, J., Makhoul, R., Rivas, J., IEEE
  IEEE.2018
- **A Study on Off-State Losses in Silicon-Carbide Schottky Diodes**
  Tong, Z., Zulauf, G., Rivas-Davila, J., IEEE
  IEEE.2018
- **Design of a GaN-Based, Inductor-less, Wireless Power Transfer System at 40.68 MHz**
  Surakitbovorn, K., Rivas-Davila, J., IEEE
  IEEE.2018
- **High-Frequency Bidirectional Resonant Converter for High Conversion Ratio and Variable Load Operation**
  Gu, L., Surakitbovorn, K., Zulauf, G., Chakraborty, S., Rivas-Davila, J., IEEE
  IEEE.2018
- **Effect of Class 2 Ceramic Capacitance Variations on Switched Capacitor and Resonant Switched Capacitor Converters**
  Xu, J., Gu, L., Hernandez, E., Rivas-Davila, J., IEEE
  IEEE.2018
- **60 V-to-35 kV Input-Parallel Output-Series DC-DC Converter Using Multi-Level Class-DE Rectifiers**
  Park, S., Gu, L., Rivas-Davila, J., IEEE
  IEEE.2018: 2235–41
- **C-OSS Losses in Silicon Superjunction MOSFETs across Constructions and Generations**
  Zulauf, G., Rivas-Davila, J. M., IEEE
  IEEE.2018: 136–39
- **Vacuum Testing of a Miniaturized Switch Mode Amplifier Powering an Electrothermal Plasma Micro-Thruster** *FRONTIERS IN PHYSICS*
  Charles, C., Liang, W., Raymond, L., Rivas-Davila, J., Boswell, R. W.
  2017; 5
- **Low-Mass RF Power Inverter for CubeSat Applications Using 3-D Printed Inductors** *IEEE JOURNAL OF EMERGING AND SELECTED TOPICS IN POWER ELECTRONICS*
  Liang, W., Raymond, L., Praglin, M., Biggs, D., Righetti, F., Cappelli, M., Holman, B., Davila, J. R.
  2017; 5 (2): 880-890
- **Universal Line Input Power Factor Preregulator Using VFX Technique**
  Gu, L., Liang, W., Praglin, M., Chakraborty, S., Rivas-Davila, J., IEEE
  IEEE.2017: 1810–15
- **Evaluation of GaN Transistor Losses at MHz Frequencies in Soft Switching Converters**
  Surakitbovorn, K., Davila, J., IEEE
  IEEE.2017
- **Design of Very-High-Frequency Synchronous Resonant DC-DC Converter for Variable Load Operation**
  Gu, L., Liang, W., Davila, J., IEEE
  IEEE.2017: 3447–54
- **The "Smart Dim Fuse": A New Approach to Load Control as a Distributed Energy Resource**
  Goldin, A., Rajagopal, R., Rivetta, C., Davila, J., IEEE
  IEEE.2017
- **High-frequency, High-power Resonant Inverter with eGaN FET for Wireless Power Transfer** *IEEE Transactions on Power Electronics*
  Choi, J., Tsukiyama, D., Tsuruda, Y., Rivas-Davila, J. M.
  2017
- **Structurally supportive RF power inverter for a CubeSat electrothermal plasma micro-thruster with PCB inductors**
  Liang, W., Raymond, L., Davila, J., Charles, C., Boswell, R., IEEE

IEEE.2017: 2141-2145

- **A Portable Electrostatic Precipitator to Reduce Respiratory Death in Rural Environments**
  Talukder, S., Park, S., Rivas-Davila, J., IEEE
  IEEE.2017
- **Isolated Resonant DC-DC Converters with a Loosely Coupled Transformer**
  Park, S., Rivas-Davila, J., IEEE
  IEEE.2017
- **A compact RF power inverter with reduced EMI for a CubeSat electrothermal micro-thruster**
  Liang, W., Cui, X., Raymond, L., Gu, L., Charles, C., Boswell, R., Rivas-Davila, J., IEEE
  IEEE.2017
- **A Multi-resonant Gate Driver for Very-High-Frequency (VHF) Resonant Converters**
  Gu, L., Liang, W., Rivas-Davila, J., IEEE
  IEEE.2017
- **A Unified Model for High-Power, Air-Core Toroidal PCB Inductors**
  Zulauf, G., Liang, W., Rivas-Davila, J., IEEE
  IEEE.2017
- **Output Capacitance Losses in 600 V GaN Power Semiconductors with Large Voltage Swings at High- and Very-High-Frequencies**
  Zulauf, G., Liang, W., Surakitbovorn, K., Rivas-Davila, J., IEEE
  IEEE.2017: 352–59
- **Implementing an impedance compression network to correct misalignment in a wireless power transfer system**
  Choi, J., Rivas, J., IEEE
  IEEE.2017
- **Power Loss of GaN Transistor Reverse Diodes in a High Frequency High Voltage Resonant Rectifier**
  Park, S., Rivas-Davila, J., IEEE
  IEEE.2017: 1942–45
- **3-D-Printed Air-Core Inductors for High-Frequency Power Converters** *IEEE TRANSACTIONS ON POWER ELECTRONICS*
  Liang, W., Raymond, L., Rivas, J.
  2016; 31 (1): 52-64
- **Low mass RF power inverter for cubesat plasma thruster using 3D printed inductors**
  Liang, W., Raymond, L., Praglin, M., Biggs, D., Righetti, F., Cappelli, M., Holman, B., Davila, J., IEEE
  IEEE.2016
- **Resonant Bi-Polar DC Pulse Power Supply for Electroporation Applications**
  Raymond, L., Liang, W., Surakitbovourn, K., Davila, J., IEEE
  IEEE.2016
- **A Design Methodology for Class-D Resonant Rectifier with Parallel LC Tank**
  Park, S., Rivas-Davila, J., IEEE
  IEEE.2016
- **Evaluation of a 900 V SiC MOSFET in a 13.56 MHz 2 kW resonant inverter for wireless power transfer**
  Choi, J., Tsukiyama, D., Rivas, J., IEEE
  IEEE.2016
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