

# Zhechi YE

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## EDUCATION

**Department of Electrical Engineering, Tsinghua University, China** Aug 2015- Present

B.E. in Electrical Engineering, GPA: Major: 3.77/4.0 Rank: 6/132

Core Courses: Power Electronics (A), Automatic Control Theory (A), Electromagnetic Fields (A-), Electric Machinery Fundamentals (A-), Principles and Applications of Microcomputers (A-), Digital Electronics (A-), Fundamentals of Analog Electronics (A-), Principles of Circuits (A)

Coursera Courses: Power Electronics Specialization (University of Colorado Boulder)

**Chinese Undergraduate Visiting Research (UGVR) Program, Stanford University** | Visiting Researcher  
July 2018-Aug 2018

- Only 18 students from China are selected to the program every year
- Research training in the Stanford University Power Electronics Research Lab
- Presentation skill training by the School of Engineering

**School of Electrical and Electronic Engineering, The University of Manchester** | Visiting Student  
Aug 2017

- Visiting labs and teaching activities
- Attending lectures and seminars of various academic topics including high voltage engineering, power electronics and power system

## PUBLICATION

- Zhechi Ye and Xudong Wang, "Behavioral Model of SiC MOSFET on Hard-Switching Condition," in *International Conference on Electrical Machines and Systems (ICEMS)*, Oct. 2018
- Zikang Tong, Lei Gu, Zhechi Ye, Kawin Surakitbovorn, and Juan Rivas-Davila, "On the Techniques to Utilize SiC Power Devices in High- and Very High-Frequency Power Converters," *IEEE Trans. Power Electronics*, submitted.
- Jiale Xu, Lei Gu, Zhechi Ye, Saleh Kargarrazi and Juan Rivas-Davila, "Cascode GaN/SiC Power Device for MHz Switching", to appear in the Applied Power Electronics Conference and Exposition 2019

## RESEARCH EXPERIENCES

**Design and Building of High Frequency Class E Converters** | Stanford University  
July 2018-Aug 2018

Advisor: Juan Rivas-Davila, Assistant Professor of Electrical Engineering, Stanford University

- Designed and built high efficiency 13.56MHz 600W Class E converters by using SiC MOSFETs and JFETs
- Simulated and quantitatively compared the converter performances by using various wide-bandgap semiconductor devices
- Found that the utilization of a newly proposed cascode structure, consisting of a GaN FET and a SiC JFET, could provide the best converter performance
- Designed and built a 6.78MHz Class E converter based on GaN FET, conducted a Sawyer-Tower test to characterize its Coss loss, and showed a consistency of Coss loss under different drain-source voltage waveform shapes

**Modeling of a Novel Trench Gate SiC Module** | Tsinghua University and Fuji Electric  
Aug 2017- May 2018

Advisor: Zhengming Zhao, Professor of Electrical Engineering, Tsinghua University

- Proposed and implemented a mathematical transient model for SiC MOSFET modules based on datasheet parameters
- Calculated the transient switching times of SiC MOSFET using the proposed model
- Conducted double pulse test to verify and calibrate the proposed module model, and unveiled that the proposed

- model is more accurate than the models reported previously
- Completed a first-author paper, and presented the work at the *International Conference on Electrical Machines and Systems (ICEMS) 2018*

### **High Power Density High Efficiency DC-DC Converter | Tsinghua University**

May 2018- Present

Advisor: Kai Sun, Associate Professor of Electrical Engineering, Tsinghua University

- Designed and built a 350kHz 400W CLLC converter based on GaN devices
- Added closed loop control and bidirectional operation mode to the converter
- Demonstrated a high power density and high efficiency (92%) in the built converter
- The whole converter system was sent for the GaN Systems Cup Power Electronics Design Competition 2018 sponsored by China Power Supply Society and GaN Systems Inc.

### **Automatic Length Measuring Instrument | Tsinghua University**

Jun 2017- Aug 2017

Advisor: Hong Wang, Associate Professor of Automation, Tsinghua University

- Developed a system based on FPGA to measure the length of a workpiece automatically
- Designed the automatic control method for the whole system
- Assembled the instrument with sensors as well as FPGA and SWR machines
- Conducted experiments on the accuracy and reliability of the instrument, and did system-level optimization based on the experiment result

### **SCHOLARSHIPS**

Comprehensive Scholarship for Academic Excellence, Tsinghua University (top 2%)	2016, 2017 & 2018
Heng Da Scholarship for Academic Excellence, Tsinghua University (5/405)	2016
WuLiangYe Science and Technology Scholarship for Academic Excellence, Tsinghua University (2/405)	2017
Scholarship for Science and Technology Innovation Excellence, Tsinghua University (top 3%)	2018

### **SKILLS**

**Standardized English Test:** TOEFL: Total 105 (Reading 30, Listening 28, Speaking 22, Writing 25)

GRE: 328 (V158 + Q170) +3.0

**Software:** C, SPICE, Matlab & Simulink, Aultium Designer, Multisim, Eagle, Vivado, STATA, LINGO

**Hardware:** PCB design, FPGA, MCU, electronic lab equipment