

**High-Frequency High-Density Power
Conversion with Wide-Bandgap
Semiconductors**

Lei Gu

Apple Inc.

Location: EEB 132 & Zoom
2:00 pm – 3:30 pm, Friday, Sept. 17th, 2021

Meeting ID: 947 0191 2463 Passcode:138956

<https://usc.zoom.us/j/94701912463?pwd=eW1KVmhuODFHdHpMemhQbTlIMEZ6Zz09>

Abstract: High-performance miniaturized power electronics is a key enabling technology for many emerging applications, such as electric vehicles (EV), medical devices, and soft- and micro-robotics. This talk presents a new generation of power electronic converters that leverage high-frequency (3-300 MHz) operations to reduce energy storage requirements and achieve a significant reduction in overall size and cost. New circuits and system architectures are introduced that enable such dramatic increases in operating frequencies. We will show several system examples, including 1) a 1.7 kW inductive wireless power transfer system for EV charging, 2) a 54 kV high-voltage power supply for Xray CT scanners, and 3) a compact high-intensity focused ultrasound (HIFU) device for noninvasive cancer therapy, to demonstrate the promising potential of high-performance megahertz power electronics in various applications.

Biography: Lei Gu received his Ph.D. in electrical engineering from Stanford University in 2019 and was a postdoctoral scholar with the Stanford Power Electronics Research Lab between 2019-2021. His research interests include power electronic systems and components and their use in various applications, such as energy, healthcare, and robotics. Lei is a recipient of the IEEE Power Electronics Society Ph.D. Thesis Talk Award and two IEEE COMPEL Best Paper Awards.



Faculty Hosts: Mike Chen, Hossein Hashemi, Manuel Monge, Constantine Sideris

Student Organizer & Host: Qiaochu Zhang (qiaochuz@usc.edu)