

**“Ultra-high Efficiency Power Conversion Technology for Wide Voltage Range Applications”**



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**2:00 – 3:00 p.m. Olin 202**

**Reception in Olin 204 3:00 – 3:30 p.m.**

**Abstract:** There is increasing demand to use wide input voltage range power converters in industrial, railway, aerospace, battery-powered, advanced computing, and server applications. A wide input voltage range converter provides great flexibility, helping system designers cope with changes in power requirements. They can act as a one-fit-all solution when one application requires different voltage ranges. Power converters can usually achieve high efficiency at a specific input voltage. However, their efficiency drops drastically once the input voltage deviates from the optimal value. A lower efficiency power converter generates more loss and needs bulkier heatsinks to reduce temperature rise. A wide input voltage range power converter often achieves a much lower power density than a narrow input voltage range counterpart. This presentation will discuss the general challenges of maintaining high-efficiency power conversion under a wide input voltage range. Specific applications demand wide input voltage range power conversion will be shared along with possible solutions. Finally, examples of power converter implementations achieving ultra-high efficiency and high density will be presented.

**Biography:** Dr. Peng Fang received his B.S. degree from Chongqing University of Post and Telecommunication, China, in 2006, his M.Sc. degree from Hong Kong University of Science and Technology, China, in 2007, and his Ph.D. degree from Queen’s University, Canada, in 2016. From 2008 to 2011, he was a research engineer with ASM Pacific Technology in Hong Kong. He has been with the University of Minnesota Duluth since 2018. Dr. Fang’s research interests are along the line of power conversion. He previously worked on power conversion technology for LED lighting extensively. He had two issued U.S patents from his LED light research. Dr. Fang is currently working on a variety of power conversion technologies, including point-of-load converters, wide voltage range power converters with ultra-high efficiency, and the power architecture for aircraft electrification.