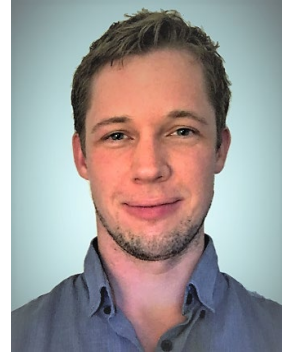


Faculty Candidate, Electrical Engineering Open Search

High Performance Energy Conversion Enabling Next Generation Technologies

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Tuesday, March 5, 2024
9:00 AM • WANG 1004



Abstract

With the recent commercialization of wide bandgap (WBG) semiconductor devices, including gallium nitride and silicon carbide, industries are expecting significant improvements in power electronic systems at reduced cost within the coming years. Meanwhile, circuit designers have responded to growing pressure within the portable device, data center, and electric vehicle (EV) markets to innovate higher density power conversion solutions with reduced weight, increased efficiency, and faster transient response. The result has been dramatic improvements in energy handling capability and subsequent intensified effort on realizing next generation capabilities—including commercially viable electric aircraft. In this presentation we will briefly dive into a technical discussion of a selection of recently published state-of-the-art energy conversion methods which show promise for next generation energy applications. Questions from attendees are strongly encouraged.

Bio

Nathan Miles Ellis was born in Cork, Ireland. He received the B.S. degree in Electrical and Electronic Engineering from the University College Cork, Ireland, in 2013, and the M.S. and Ph.D degrees in Electrical and Computer Engineering from the University of California, Davis in 2017 and 2020 respectively. During this time, he was funded in part by both Texas Instruments and the U.S. Dept. of Education in recognition of research excellence in areas of national need (GAANN). Dr. Ellis is currently with the University of California, Berkeley within the Department of Electrical Engineering and Computer Sciences. His primary area of research is power electronics where he is an author on over 30 journal and conference publications. His interests include vehicle electrification, renewable energy integration, datacenter power delivery, biomedical devices, aerospace, and mixed signal integrated circuit design. He is an author on two IEEE prize papers.

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