
Electrical & Computer Engineering
S E M I N A R
Louisiana State University

**Reliability of Power Electronics Energy
Systems: Electromagnetic Interferences**

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Abstract—Modern energy systems (e.g., electric ships, aircraft, and vehicles) are increasingly designed with interconnected power converters that are tightly packaged to form an extensive network. It enables high-efficiency multi-functional operations by integrating numerous fast-switching wide bandgap (WBG) devices. However, such a complex network could create a large common-mode (CM) electromagnetic interference (EMI) flowing into common chassis or ground. This can make unprecedentedly large but unknown background noise. Despite increasing background noise in a network, the state-of-the-art CM EMI characterization efforts have focused mostly on single discrete devices or single packaged modules until recently. However, a limited study has been done on a large background CM EMI noise, especially under extensive networks. Furthermore, it has not been fully characterized; it has become a major technical bottleneck in electrified transportation. Due to a limited understanding of such background noise dynamics, most resort to bulky and costly passive filters with considerable tradeoffs between size, weight, and cost. These are not viable. This talk will address such emerging EMI issues that have not been discussed yet in the state of the art but are already causing problems in industry. The expected level of intended audience is with entry and intermediate backgrounds in electrical and mechanical engineering.

Bio—Dr. Seungdeog Choi is an Associate Professor in the Electrical and Computer Engineering Dept at Mississippi State University (MSU). He joined the university in Fall 2018 and is in his 6th year of service. He received B.S. from Chung-Ang University in 2004, M.S. from Seoul National University in 2006, and Ph.D. at Texas A&M University, College Station, TX, in 2010. He was a research engineer with L.G. Electronics, Seoul, Korea, 2006-2007, and Toshiba International Corp., Houston, TX, 2010-2012. He was an assistant professor at the University of Akron in 2012-2018. The keywords of his research is “Reliability, Efficiency, and Power Density.” He has published around 170 articles, including over 10 U.S. patents in the area. His research has been widely sponsored by the federal government, foundation, state government, and industry.

When: Tuesday, 5 March 2024, 9:30 - 10:30
Where: Room 3316E Patrick F. Taylor Hall
Info: <https://www.lsu.edu/eng/ece/seminar>

