Good Morning,
You are invited to attend our weekly ECE Graduate Seminar.

Old Dominion University
College of Engineering and Technology
Department of Electrical and Computer Engineering

All lectures to be held at 3:00pm on Fridays online at
https://vs.prod.odu.edu/kvs/interface_webex/?cid=202020_ECE731ECE831VS_94044
For more information, contact Dr. Chung Hao Chen at (757) 683-3475 or email cxchen@odu.edu.

Friday, April 23, 2021 Seminar Topic:

ANALYSIS ON OPTIMAL IMPEDANCE TRACKING OF CLASS-E^2 RESONANT POWER CONVERTER FOR CAPACTIVE-WIRELESS POWER TRANSFER by Yashwanth Bezawada, Ph.D. Candidate in the Department of Electrical & Computer Engineering at Old Dominion University

Abstract:
Various methods were developed for maximum power point tracking of the CPT system, our work follows a new approach of finding impedance characteristics for a certain range of frequencies. Considering the drone battery as an application, a single active switch Class-E^2 resonant converter with circular coupling plates is utilized. Impedance characteristics are plotted with the help of equations related to input and resonant impedance. And the impedance tracking is laid out for various resonant inductors, the difference in current peak is noticed for each case. Simulations verify and provide additional information on the reactive type. Hardware tests also provide the variation of input impedance by means of input current, and output voltage for a range of frequencies. The efficiency at optimal impedance points for resonant inductor 50 µH and 100 µH are noted. Efficiency for a resonant inductor with 50 µH has 3 % higher compared to the CPT with a 100 µH resonant inductor. Further hardware tests were performed to investigate the impact of frequency and duty cycle variation. Zero-voltage-switching (ZVS) limits is also discussed with respect to both frequency and duty cycle.

Bio:
Yashwanth Bezawada is a Ph.D. candidate from the Electrical & Computer Engineering Department at Old Dominion University. He is working in the power research lab under Dr. Yucheng Zhang. He received his bachelor's in ECE from Malla Reddy Institute of Technology & Science in 2014. Later he received a master's in ECE from Old Dominion University in 2017. His area of research is in the power electronics/power systems domain. Previously he worked on high power DC-DC power converter. Currently, his work focuses on wireless power transfer using capacitive coupling plates.