

Good Afternoon,
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, March 26, 2021 Seminar Topic:

A MINIATURIZED PLASMA IMPEDANCE PROBE SYSTEM FOR FAST MEASUREMENTS OF PLASMA DENSITY ON A NASA USIP CUBESAT MISSION (JAGSAT I) by Dr. Edmund Spencer, Associate Professor in the ECE Department at University of South Alabama

Abstract:

An electrically short dipole antenna (1-2 m) is commonly used as a probe to measure plasma properties in the earth's ionosphere. The complete measurement system consisting of the dipole and associated circuitry is called a Plasma Impedance Probe (PIP). I will describe a new version of this instrument, called a Time Domain Impedance Probe (TDIP), that has been tested on a sounding rocket flight and is now being developed to fly on a NASA Undergraduate Student Instrument Program (USIP) 2U CubeSat, JAGSAT I which be launched out of the ISS in 2022. JAGSAT I is being developed for the scientific purpose of measuring plasma electron density at submeter level resolution. The technology objective is to develop a fully functional CubeSat specifically with power, attitude control, and telemetry specifications sufficient to support the science objective. The project is being carried out by a team of undergraduates under the close mentorship of several faculty members across the multiple engineering disciplines. One graduate student serves as mentor for the system design and integration effort. Training is hands-on at the Space Environment and Instrument Laboratory at University of South Alabama. University of South Alabama departments of electrical and mechanical engineering have a strong track record in using undergraduate students in research. Undergraduate education remains an extremely high priority for the university, and the USIP program in particular exposes our student body to opportunities in space research at the national level.



Bio:

Dr. Edmund Spencer is an Associate Professor in the ECE Department at University of South Alabama. He is a recipient of an NSF CAREER grant, and his work is supported by grants from NSF and NASA. His research interests are in Space Physics, Space Science Instrumentation, and Electromagnetics. He is the Director of the Space Environment and Instrument Laboratory at University of South Alabama that is developing JAGSAT I.

Dr. Spencer has authored or co-authored 35 peer reviewed journal and conference papers, presented 43 posters and papers at conferences, and presented several invited talks. He is a member of the IEEE, EGU, COSPAR and AGU. Dr. Spencer is the Chair of the Technical Program for IEEE SouthEastCon 2022, that will be held in Mobile, Alabama.