Announcing the Final Examination of Mathew Lukacs for the degree of Master of Science

Time & Location: March 29, 2011 at 4:30 PM in HEC 356
Title: WIRELESSLY SENSING RESONANT FREQUENCY OF PASSIVE RESONATORS WITH DIFFERENT Q FACTORS

Numerous techniques exist for measuring temperature using passive devices such as SAW filters. However, SAW filters have a significant limitation regarding high temperature environments exceeding 1000°C. There are several applications for a high temperature sensor in this range, most notably heat flux or temperature in turbine engines. For these environments, an alternative to SAW filters is to use a passive resonator. The resonate frequency will vary depending on the environment temperature. Understanding how the frequency changes with temperature will allow us to determine the environmental temperature. In order for this approach to work, it is necessary to induce resonance in the device and measure the resonance frequency. However, the extreme high temperature makes wired connections impractical, therefore wireless interrogation is necessary. To be practical a system of wireless interrogation of up to 20cm is desired.

Major: Electrical Engineering

Educational Career:
Bachelor’s of Electrical Engineering, BS, 2002, Pennsylvania State University

Committee in Charge:
Dr. Xun Gong, Chair, EECS
Dr. Linwood Jones, EECS
Dr. Parveen Wahid, EECS

Approved for distribution by Dr. Xun Gong, Committee Chair, on March 15, 2011.

The public is welcome to attend.