**ECE Seminar**

**Sensing: Interrogating Physical Systems**

**Friday, January 29, 2016 3:00 – 4:30 p.m.**

**201B Engineering South**

**Refreshments and discussion to follow**

**Abstract:**

The world is becoming saturated with sensors that produce large amounts of data, but the salient question is how to extract useful and actionable information from these sensors. Because it is often inefficient to directly process vast amounts of raw data, an emerging theme in current research is "doing more with less." By exploiting existing structure in the data, we can efficiently extract useful information while reducing the technological requirements on processing systems. In this talk, I will present two applications (1. Detecting RF White Space and 2. Passive Radar) in which we can extract useful information from acquired data more efficiently than traditional approaches. In RF white space detection, we exploit the sparsity of spectrum usage to alleviate the requirements on the analog-to-digital converters (ADC) used in such systems, while in passive radar we exploit existing signal sources, such as digital television transmitters, so that we do not have to provide a power-hungry RF transmitter.

**Speaker Biography:**

Andrew Harms received the B.S. degree (summa cum laude) in Electrical Engineering from the University of Notre Dame in 2008 and the Ph.D. in Electrical Engineering from Princeton University in 2013. He is currently a post-doc researcher at Duke University working with Prof. Jeffrey Krolik. Additionally, he has spent time at Air Force Research Labs working on non-linear estimation problems and at AT&T Labs working on detection of wireless television signals. His research interests include statistical signal processing, efficient sampling and processing of signals, information theory, and signal processing for radar systems.

**Public is welcome**