

## Microwaves and Magnetism

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**DATE:** Thursday, March 28, 2013

**TIME:** 3:30 PM

**PLACE:** C2045

We hope to provide the usual refreshments.

**ABSTRACT:** Microwaves are an extremely important part of your modern life. If you don't have the patience for a conventional oven, microwaves cook your food. If you call someone on your cell phone, microwaves carry the message. Any wireless network you connect to uses microwaves to communicate with your devices. Satellite communications are all in microwaves. There are a lot of microwaves bouncing around the world around you. In order to use these microwaves, we must be able to detect them and manipulate them. We need to be able to do it with devices that are small and lightweight. Magnetic millimeter wave guides are a relatively new way to do this. What are the physics behind these devices, what do they do and how do they work?

This presentation addresses some basic questions: What is a microwave? Why is it good for communication? What are magnetic materials? Why do they interact with microwaves? These questions bring up a number of very interesting topics such as ferromagnetic resonance, evanescent waves, non-reciprocity, and spin waves. This presentation introduces these topics and hopes to give some insight into novel ways the physics can be exploited.

**ALL ARE WELCOME!!!**