Graduate Seminar – IV, Spring 2014

***ECE Department***

Multi-Tansceiver Radios:

Enablers for Dense, High Capacity Wireless Mobile Ad-hoc Networks

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Cellular phones accustomed us to ensured and high data rate wireless connectivity, even in crowded environments, through ubiquitous base stations. How can we achieve reliable coverage and high throughput in dense deployments without any infrastructure, using an ad-hoc network as would be available during an emergency or for military operations? A solution is a radio with multiple cooperative transceivers, each covering a broad frequency range, to spread the traffic over several links at different frequencies and reduce collisions.

In this talk, we will introduce the challenge of dense and scalable wireless systems, review the benefits of a multi-transceiver radio, and present a design for the RF front-end that reduces self-interference and external interference. We will show implementations for an integrated digital section with low power consumption and compactness, and review the software architecture supporting multiple simultaneous data streams. We will also describe the dynamic spectrum sensing functionality used to select frequencies as an example of cognitive functionality.

We will present results that show multi-transceiver radios solve the coverage and capacity challenge experienced so far in dense settings by traditional radios.

***Date*: Wednesday, March 5, 2014. *Time*: 3:30pm; *Room*: KI-306**