

# **Effect of cognition and multiple antennas on queuing delay in wireless networks**

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**Date:** February 15, 2008

**Time:** 10:00 - 11:30 AM

**Venue:** CReWMan Lab (Woolf Hall 413)

## **Abstract**

In this talk we provide an overview of the wireless networking research in our group at SMU. Specifically, we focus on cross layer (MAC and PHY) optimization techniques to improve system performance and present our results in two different scenarios. First, we consider the transmission of bursty traffic over a fading channel and quantify the effect of adding multiple antennas at a node on the queuing delay. Surprisingly, we find that there exist scenarios when adding an additional antenna can actually lead to increased queuing delay. Second, we consider a cognitive interference channel with random packet arrivals at multiple users. In a fairly non-intuitive result, we show that if a primary user shares its information with a cognitive user, the primary user will see improved performance, even when the cognitive user does not use any of its resources to help the primary user. Depending on the availability of time, we also present some results on queuing in multi-hop networks.

## **Biography**

Dinesh Rajan received his B. Tech. degree from Indian Institute of Technology (IIT), Madras in Electrical Engineering in 1997. He was also awarded the M.S and Ph.D degrees from Rice University, Houston, Texas both in the areas of Electrical and Computer Engineering. He is currently an Assistant Professor in the Electrical Engineering Department at Southern Methodist University (SMU), Dallas, Texas. His research interests are in information theory, wireless networking and computational imaging.