



*Dept. of Electrical and Computer Engineering*

# *Colloquium*

*Sponsored by the IEEE Columbus Chapter of the Signal Processing Society*

## **Novel Architectures and Algorithms for Adaptive Scheduling and Routing in Wireless Networks**

**R. Srikant**

*University of Illinois at Urbana-Champaign*

**Wednesday, Nov. 5, 2:30 PM  
Dreese Laboratory 260**



**Abstract:** The back-pressure algorithm is a well-known adaptive scheduling and routing algorithm that achieves maximum throughput in wireless networks. However, its delay performance may be quite poor even when the traffic load is not close to network capacity due to the following two reasons. First, each node has to maintain a separate queue for each commodity in the network, and only one queue is served at a time. Second, the backpressure routing algorithm may route some packets along very long routes. We will present solutions to address both of the above issues, and hence, dramatically improve the delay performance of back-pressure-type adaptive algorithms. One of the suggested solutions also decreases the complexity of the queueing data structures to be maintained at each node.

This is joint work with Loc Bui and Alexander Stolyar.

### **Biography:**

R. Srikant is with the University of Illinois at Urbana-Champaign, where he is a Professor in the Department of Electrical and Computer Engineering and a Research Professor in the Coordinated Science Lab. His research interests include communication networks, stochastic processes, queueing theory, information theory, control theory and game theory.

Filename: srikant.doc  
Directory: C:\Documents and Settings\duhigg.ECE\Local  
Settings\Temporary Internet Files\OLKF35  
Template: C:\Documents and Settings\mdodd\Application  
Data\Microsoft\Templates\colloquium.dot  
Title: Department of Electrical Engineering  
Subject:  
Author: Margaret Dodd  
Keywords:  
Comments:  
Creation Date: 10/27/2008 12:57:00 PM  
Change Number: 4  
Last Saved On: 10/27/2008 1:03:00 PM  
Last Saved By: Margaret Dodd  
Total Editing Time: 9 Minutes  
Last Printed On: 10/28/2008 8:55:00 AM  
As of Last Complete Printing  
Number of Pages: 1  
Number of Words: 237 (approx.)  
Number of Characters: 1,356 (approx.)