



Electrical Engineering Colloquium
IEEE Signal Processing Society – Dallas Chapter

**“Power Efficient Transmission Policies for Delay Bounded
Traffic over Wireless Channels”**

Dr. Dinesh Rajan
Department of Electrical Engineering, SMU

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The current and future wireless systems need to support a multitude of services with a wide range of data rates and reliability requirements. The limited battery resource at a mobile terminal coupled with the hostile multipath fading channel makes the problem of providing reliable high data rate services challenging. In this talk we present a framework for the design of efficient transmission mechanisms that support multimedia traffic with different latency requirements over wireless channels.

We develop schedulers that use queuing of packets at the transmitter to lower the transmission power or packet loss rates. The proposed optimal schedulers can significantly reduce the transmission power (over 60% in certain cases) for small increases in packet delays, thereby providing another avenue for mobiles to conserve power. The proposed schedulers use a combination of rate and power control mechanisms based on the source (queue) and channel (fading) states. We will briefly discuss some results on multiuser scheduling in broadcast channels.

BIOGRAPHY:

Dinesh Rajan is currently an Assistant Professor in the electrical engineering department at SMU. Dinesh received his Ph.D (2002) and MS (1999) in electrical and computer engineering from Rice University and his B.Tech (1997) from IIT, Madras, India. As a senior graduate student, he worked at Nokia Research Centers in Irving and Helsinki during summers of 1998 and 1999. His research interests are in information theory, wireless communication and networking.

For more information on the Dallas Chapter of the IEEE Signal Processing Society, see <http://www.utdallas.edu/~kehtar/ieee-sp/ieee-sp-index.htm>.