

# IEEE AS/ComSoc/CIS/IEEE SEMINAR

## “Call Admission Policies for DS-CDMA Cellular Networks Based on Power Control Setpoints”

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**Friday, March 11, 2005, 3.00 p.m. (Refreshments will be provided)**  
**G-31, Emerson Electric Co. Hall, University of Missouri-Rolla**

This talk present call admission control algorithms for SIR-based power-controlled DS-CDMA cellular networks. We consider networks that handle both voice and data services. When a new call (or a handoff call) arrives at a base station requesting for admission, our algorithms will calculate the desired power control setpoints for the new call and all existing calls. We will provide necessary and sufficient conditions under which the power control algorithm will have a feasible solution. These conditions are obtained through deriving the inverse of the matrix used in the calculation of power control setpoints. If there is no feasible solution to power control or if the desired power levels to be received at the base station for some calls are larger than the maximum allowable power limits, the admission request will be rejected. Otherwise, the admission request will be granted. When higher priority is desired for handoff calls, we will allow different thresholds (i.e., different maximum allowable power limits) for new calls and handoff calls. We will develop an adaptive algorithm that adjusts these thresholds in real-time as environment changes. The performance of our algorithms will be shown through computer simulation and compared with existing algorithms.

*Derong Liu received the Ph.D. degree in Electrical Engineering from the University of Notre Dame, Notre Dame, Indiana, in 1994. He is currently an Associate Professor of Electrical and Computer Engineering, of Bioengineering, and of Computer Science, University of Illinois at Chicago. He was recipient of the Michael J. Birck Fellowship from the University of Notre Dame (1990), the Harvey N. Davis Distinguished Teaching Award from Stevens Institute of Technology (1997), and the Faculty Early Career Development (CAREER) award from the National Science Foundation (1999). He is a Fellow of the IEEE and a member of Eta Kappa Nu.*