DEPARTMENT OF MATHEMATICS
Illinois State University

Undergraduate Colloquium

Title: Queueing networks in heavy traffic: History and some recent results

Speaker: Professor Arka P. Ghosh
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Location: STV 121
Time: 3:00 - 4:00 pm on Thursday (04/18/2019)

Abstract: Stochastic processing networks arise as models in manufacturing, telecommunications, transportation, computer systems, the customer service industry, and biochemical reaction networks. Common characteristics of these networks are that they have entities (jobs, packets, vehicles, customers, or molecules) that move along routes, wait in buffers, receive processing from various resources, and are subject to the effects of stochastic variability through such quantities as arrival times, processing times, and routing protocols.

The mathematical theory of queueing aims to understand, analyze, and control congestion in stochastic processing networks. In this talk, we will review some of the major developments in the last century with more emphasis on some common approximations used in the last couple of decades. In particular, we will discuss broad results for control of large networks as well as more detailed results for control of specific smaller networks, under heavy traffic approximations