Graph and Hypergraph Models for Scheduling Problems in Wireless Networks

Amin Bahmanian
Graduate Student, Department of Mathematics and Statistics
Auburn University, Auburn, AL

Abstract

In wireless networks, user nodes communicate with each other using a shared wireless spectrum. This resource sharing introduces co-channel interference, which may cause severe deterioration to the communication quality of a communication link. After giving a background on graph theory, in this talk I present the graph model for the scheduling problem in wireless networks. Then I will discuss a more general model using hypergraphs. In mathematics, a hypergraph is a generalization of a graph, where an edge can connect any number of vertices. It turns out that in an arbitrary network, the successful transmissions under any graph model can be improved by a hypergraph. Moreover, in some networks, a hypergraph can double the uniform throughput.

Bio

Amin Bahmanian is a graduate student of Chris A. Rodger at Auburn University. He is the recipient of various awards at Auburn University including Outstanding Teaching Award, Emily Haynsworth Fellowship, Outstanding Research Award, and Outstanding Graduate Student. He also received an Honorable Mention at ACM ICPC - International Collegiate Programming Contest, Asia Region. His general research interests include Graph and Hypergraph Theory, Coding Theory, and applications in wireless networks. In particular, he is interested in decompositions of hypergraphs, embedding partial decompositions, and scheduling problems in wireless networks.

MONDAY, NOVEMBER 7, 2011, 4:00 P.M.
235 BROUN HALL

http://www.eng.auburn.edu/~pagrawal/seminar/2011