Discrete Mathematics Seminar

Time: Friday, 1 April 2011, 12:30-1:05 PM
Room: 238 Derrick Hall
Title: Intrinsic Metrics on Graphs & Graph Geometry
Speaker: Dr. Douglas Klein, Texas A&M University at Galveston

Abstract:

Graphs are a cosmopolitan representation of a wide range of things: group networks in sociology, food-webs in eco-biology, reaction networks in biochemistry, Feynman diagrams in physics, electrical circuits in engineering & physics, and molecules in chemistry, & molecular biology. As molecular representations, graphs seemingly retain information about only a small part of a molecule's character – in particular, they seem to suppress molecular geometry (along with associated electron densities), though ever since their introduction ~150 years ago, they have been extensively utilized. Thus the intrinsic characteristics of graphs are of general interest. Naturally there is a question of intrinsic metrics on graphs, independently of whether the graphs are used to represent molecules, or whatever.

In mathematical graph-theory, there is extensive work on the shortest-path metric – and practically no other metric. Still one might imagine other possibilities for an intrinsic graph metric, such as we address here, along with some ideas for uses of such further metrics.