Auburn Montgomery

Department of Mathematics

Colloquium/$\mathcal{MAMS}$

Time: Friday, May 11, 2007, 2:00pm

Place: Auburn Montgomery, Goodwyn Hall, Room 202

Speaker: Dr. Michael Klin, Department of Mathematics, Ben Gurion University, Be'er Sheva, Israel and visiting professor Department of Mathematics, University of Texas at Brownsville.

Title: Reaction graphs: from Mathematical Chemistry to Algebraic Graph Theory

Abstract:
This expository lecture provides a brief survey of some developments in the investigation of reaction graphs.

Organic chemists use reaction graphs for the explanation of highly degenerate rearrangements of organic compounds. First steps in this direction were done more than 40 years ago by G.Schroeder, A.T.Balaban et al. M.Randic, D.J.Klein et al started to use ad hoc algebraic and computational methods for the description of some concrete nice reaction graphs. The use of double coset approach goes back to I.Ugi, U.Dugundji et al and J.Brocas et al. G.Jones and E.K.Lloyd were the first who brought spirit of classical permutation group theory to this area of investigations. Their efforts were extended by Klin et al. The "chemical monster" - the reaction graph of bulvalene with 10!/3 vertices is one of the most amazing examples which was proceeded by generation of experts. The concept of a reaction graph turns out to be very productive for pure purposes of algebraic graph theory. Following Klin and S.Reichard, we will describe an unusual example of a partial linear space on 96 points with the aid of reaction graph defined on icosahedrons sharing the same antipodal system. Other examples of the use of reaction graphs will be briefly mentioned.

Refreshments will be served at 1:30pm; colloquium begins at 2:00pm.