

SPECIAL AFTERNOON ON DISCRETE MATHEMATICS

CENTER FOR APPLIED MATHEMATICS AND SCIENCE

DEPARTMENT OF MATHEMATICS

UNIVERSITY OF WEST GEORGIA

Friday, February 8th, 2013, Boyd 305

3:10 PM, Dr. Hong-Jian Lai, Department of Mathematics, West Virginia University, **Hamiltonicity of claw-free graphs**

Abstract: Ron Gould et al and Ryjacek et al proved that in order for a sufficiently connected graph with at most 2 forbidden induced subgraphs to have certain hamiltonian properties (such as being hamiltonian, being pancyclic, being hamiltonian-connected...) one must forbid an induced $K_{1,3}$. Ron Gould in 2011 proposed a problem to determine graphs H such that every 4-connected $\{K_{1,3}, H\}$ -free graph is pancyclic. We will give a brief report on these problems and present some of the latest developments in this area.

4:10 PM, Dr. Rong Luo, Department of Mathematics, West Virginia University, **The maximum number of edges in a non A -connected graphs**

Abstract: A sparse graph may still admit a nowhere-zero k -flow even for $k = 2, 3, 4$ such as any cycle admits a nowhere-zero 2-flow while it is not A -connected if the order of the abelian group A is not big enough. While higher density of edges in a graph would imply small group connectivity. It has been observed that graphs with small group connectivity number can not have too few edges. Luo, Xu and Yu studied the extremal problem for group connectivity: for an abelian group A with at least 3 elements and an integer $n \geq 3$, find $ex(n, A)$, where $ex(n, A)$ is the maximum number so that every n -vertex simple graph with at most $ex(n, A)$ edges is not A -connected. Lai et. al. also asked a similar question. Luo et. al. gave lower and upper bounds on the values of $ex(n, A)$ and proposed a conjecture on the the exact values. In this talk I will first talk about our results with Xu and Yu and then update with new results on $ex(n, A)$ with Wu, Ye, and Zhang. In particular, we verify the conjecture when $A = Z_k$ where $k = 4$ or k is an odd integer. The result on Z_k also implies a characterization of Z_4 -connected graphic sequences.