

## Discrete Mathematics Seminar

Time: Friday, 29 October 2010, 12:30–1:30 PM

Location: 238 Derrick Hall

Title: Domination in Functigraphs

Speaker: Dr. Cong Kang, Department of General Academics, Texas A&M University at Galveston

Abstract:

Let  $G_1$  and  $G_2$  be disjoint copies of a graph  $G$ , and let  $f : V(G_1) \rightarrow V(G_2)$  be a function. Then, a *functigraph*  $C(G, f) = (V, E)$  has the vertex set  $V = V(G_1) \cup V(G_2)$  and the edge set  $E = E(G_1) \cup E(G_2) \cup \{uv : u \in V(G_1), v \in V(G_2), v = f(u)\}$ . A functigraph is a generalization of a permutation graph in the sense of Chartrand and Harary.

A set  $D \subseteq V(G)$  is a *dominating set* of  $G$  if every vertex not in  $D$  is adjacent to at least one vertex in  $D$ . The minimum cardinality of a dominating set of  $G$  is called the *domination number* of  $G$  and is denoted by  $\gamma(G)$ .

It's readily seen that  $\gamma(G) \leq \gamma(C(G, f)) \leq 2\gamma(G)$ . We investigate for graphs generally, and for cycles in great detail, the functions which achieve the upper and lower bounds, as well as the realization of the intermediate values.

◇ This is a joint work with L. Eroh, R. Gera, C. Larson, and E. Yi.

Bio:

After earning a B.S. in mathematics from Carnegie Mellon University in 1992, Cong X. Kang entered the University of Texas at Austin as a graduate student in physics in the Fall of 1992 and transferred to the mathematics department in the Fall of 1993. He earned a Ph.D. in mathematics (algebraic geometry, advised by J. Felipe Voloch) from U.T. Austin in Spring/Summer of 1999.

After a few years of wandering through American University, The University of Texas of the Permian Basin, and Daemen College, he settled by the Gulf shores at Texas A&M University at Galveston as a Lecturer in Mathematics in the Fall of 2004, where he is currently (Fall of 2010) an Assistant Professor in Mathematics.