

Discrete Mathematics Seminar

Time: Friday, 2 April 2010, 12:30-1:30 PM.

Room: Derrick Hall room 238

Title: Bi-regular $(*,1)$ -graphs.

Speaker: Dr. Eugene Curtin, Mathematics Department

ABSTRACT:

In his talk on February 5 Shen presented results on $(*,1)$ -graphs. A $(*,1)$ -graph is one such that every pair of non-neighboring vertices has exactly one common neighbor. He proved that such a graph either 1) has a dominating vertex ; or 2) is a strongly regular graph; or 3) is a bi-regular graph such that every pair of adjacent vertices has either 0 common neighbors or f common neighbors for some f .

Examples for case 3) can be obtained by starting with complete graph of order $n+1$, selecting one vertex and subdividing the edges incident with that vertex to obtain a bi-regular graph of order $2n+1$ with degrees n and 2 , such that each pair of neighbors has 0 or $(n-1)$ common neighbors, and each pair of strangers has exactly one common neighbor.

The purpose of this talk is to investigate the conjecture that the above construction gives the only examples of bi-regular $(*,1)$ -graphs with no dominating vertex.