Discrete Mathematics Seminar

Time:　　　Friday, 4 September 2009, 12:00–1:00 PM

Location:　238 Derrick Hall

Title:　　　On the Chudnovsky-Seymour-Sullivan Conjecture on Cycles in Triangle-free Digraphs

Speaker:　Dr. Jian Shen, Mathematics Department

Abstract:

For a triangle-free simple digraph G, let $\beta(G)$ be the size of the smallest subset $X \subseteq E(G)$ such that $G \setminus X$ has no directed cycles, and let $\gamma(G)$ be the number of unordered pairs of nonadjacent vertices in G.

In 2008, Chudnovsky (Columbia University), Seymour (Princeton University), and Sullivan (Oak Ridge National Lab) showed that $\beta(G) \leq \gamma(G)$, and conjectured that $\beta(G) \leq \gamma(G)/2$. Recently, Dunkum, Hamburger, and Pór proved that $\beta(G) \leq 0.88\gamma(G)$. In this talk, we will prove that $\beta(G) \leq 0.8616\gamma(G)$.

This is joint work with three high school students (Kevin Chen, Sean Karson, and Dan Liu) from Texas State University Math Camp in the summer of 2009.

Suggested Questions for Math 7386 Students.

1. Use induction to prove the result of Chudnovsky-Seymour-Sullivan (2008):

$$\beta(G) \leq \gamma(G).$$