1108-05-373 **Hao Huang*** (huanghao@ima.umn.edu). *Digraphs of large girth with every small subset dominated.* Preliminary report.

A conjecture of Daskalakis, Mehta and Papadimitriou states that there exists integers k and l, such that if a directed graph D satisfies that every subset of l vertices share a common in-neighbor, then D contains a directed cycle of length at most k. This conjecture naturally arises from problems in game theory on designing polynomial algorithms to find the approximate Nash equilibrium. In this talk, I will discuss a counterexample to this conjecture and its connection with a well-known open problem on tournament coloring. This is joint work with Anbalagan, Lovett, Norin, Vetta and Wu. (Received January 18, 2015)