1056-05-1511 **Phong Q Chau*** (`phong.chau@asu.edu`), Tempe, AZ. *Hamiltonian Square Cycle in Ore-type Graphs.*

A square cycle is the graph obtained from a cycle by joining every pair of vertices of distance two in the cycle. A classical Theorem of Dirac asserts that every graph with minimum degree at least $n/2$ contains a hamiltonian cycle. As a generalization of Dirac's theorem, Pósa conjectured that every graph with minimum degree at least $2n/3$ contains a hamiltonian square cycle. Komlós, Sárközy and Szemerédi used the Regularity Lemma of Szemerédi and their own Blow-up Lemma to verify the truth of this conjecture for hugh graphs. In this talk, we consider an Ore-type version of Pósa's conjecture. We prove that if G is a graph on n vertices such that $\deg(u)+\deg(v) \geq 4n/3-1/3$ for all non-adjacent vertices u and v, then for sufficiently large n, G contains a hamiltonian square cycle unless its minimum degree is exactly $n/3+2$ or $n/3+5/3$. We also discuss three extremal examples showing that all conditions in the theorm are tight. (Received September 22, 2009)