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**Louis DeBiasio\*** (debiasld@muohio.edu) and **Theo Molla**. *Semi-degree threshold for anti-directed Hamilton cycles*. Preliminary report.

The *semi-degree* of a directed graph  $D$ , denoted  $\delta^0(D)$ , is the minimum of the minimum in-degree and the minimum out-degree. An *anti-directed Hamilton cycle* of  $D$  is a Hamilton cycle (in the underlying undirected graph) such that no pair of consecutive arcs form a directed path in  $D$  (note that the number of vertices of  $D$  must be even for such a cycle to exist).

In 1980, Grant conjectured that if  $D$  is a directed graph on  $2n$  vertices with  $\delta^0(D) \geq n$ , then  $D$  contains an anti-directed Hamilton cycle. However, Cai gave a counterexample to Grant's conjecture by exhibiting a directed graph on  $2n$  vertices with  $\delta^0(G) = n$  having no anti-directed Hamilton cycle. We show that for sufficiently large  $n$ , if  $D$  is a directed graph on  $2n$  vertices with  $\delta^0(D) \geq n + 1$ , then  $D$  contains an anti-directed Hamilton cycle.

This is joint work with Theo Molla. (Received September 03, 2012)