1145-VP-2778 **Ronald J Gould** and **Warren E Shull*** (wshull@emory.edu), Warren Shull, 1519 North Decatur Rd, Apt 1, Atlanta, GA 30307. *On Spanning Trees with few Branch Vertices.*

Hamiltonian paths, which are a special kind of spanning tree, have long been of interest in graph theory and are notoriously hard to compute. One notable feature of a Hamiltonian path is that all its vertices have degree at most two in the path. In a tree, we call vertices of degree at least three *branch vertices*. If a connected graph has no Hamiltonian path, we can still look for spanning trees that come "close," in particular by having few branch vertices (since a Hamiltonian path would have none).

A conjecture of Matsuda, Ozeki, and Yamashita posits that, for any positive integer k, a connected claw-free n-vertex graph G must contain either a spanning tree with at most k branch vertices or an independent set of $2k+3$ vertices whose degrees add up to at most $n-3$. In other words, G has this spanning tree whenever $\sigma_{2k+3}(G) \geq n-2$, where $\sigma_k(G)$ is defined as the smallest sum of degrees of any k-vertex independent set in G. We prove this conjecture, which was known to be sharp. (Received September 25, 2018)