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**Nina Schmuck, Stephan Wagner and Hua Wang\*** (hwang@georgiasouthern.edu).

*Distance-based functions of trees.*

We show a “universal property” of the greedy tree with a given degree sequence, namely that the number of pairs of vertices whose distance is at most  $k$  is maximized by the greedy tree for all  $k$ . This rather strong assertion immediately implies, and is equivalent to, the minimality of the greedy trees with respect to graph invariants of the form  $W_f(T) = \sum_{\{u,v\} \subseteq V(T)} f(d(u,v))$  for any nonnegative, nondecreasing function  $f$ . With different choices of  $f$ , one directly solves the minimization problems of distance-based graph invariants including the classical Wiener index, the Hyper-Wiener index and the generalized Wiener index. (Received December 13, 2011)