

# Graduate Student Research Day 2014

## Florida Atlantic University

**CHARLES E. SCHMIDT COLLEGE OF SCIENCE**

**Cohesion and Non-separating Trees in connected graphs.**

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If  $T$  is a tree on  $n$  vertices,  $n \geq 3$ , and if  $G$  is a connected graph such that  $d(u,v) \leq 2n-2$  for every pair of distinct vertices of  $G$ , it has been conjectured that  $G$  must have a non-separating copy of  $T$ . In this note, we prove this result for the special case in which  $d(u,v) \leq 2n-2$  for every pair of distinct vertices of  $G$ , and improve this slightly for trees of diameter at least four and for some trees of diameter three. We also characterize the graphs on at most 8 vertices with  $d(u,v) \leq 7$  for every pair of distinct vertices of  $G$ , and no non-separating copy of  $K_{1,3}$ .