1084-68-132 **Feodor F. Dragan*** (dragan@cs.kent.edu), Department of Computer Science, Kent State University, Kent, OH 44242, and **Muad Abu-Ata**. *Collective Additive Tree Spanners of Bounded Tree-Breadth Graphs with Generalizations and Consequences.*

We study collective additive tree spanners for families of graphs enjoying special Robertson-Seymour's tree-decompositions, and demonstrate interesting consequences of obtained results. It is known that if a graph G has a multiplicative tree t-spanner, then G admits a Robertson-Seymour's tree-decomposition with bags of radius at most $\lceil t/2 \rceil$ in G. We use this to demonstrate that there is a polynomial time algorithm that, given an n-vertex graph G admitting a multiplicative tree t-spanner, constructs a system of at most $\log_2 n$ collective additive tree $O(t \log n)$-spanners of G. That is, with a slight increase in the number of trees and in the stretch, one can "turn" a multiplicative tree spanner into a small set of collective additive tree spanners. We extend this result by showing that, for every fixed k, there is a polynomial time algorithm that, given an n-vertex graph G admitting a multiplicative t-spanner with tree-width $k-1$, constructs a system of at most $k(1+\log_2 n)$ collective additive tree $O(t \log n)$-spanners of G. (Received August 28, 2012)