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(zsuzsanna.szaniszlo@valpo.edu). *4-equitable Tree Labelings*.

A 4–equitable labeling of a graph is an assignment of labels  $\{0, 1, 2, 3\}$  to the vertices. The edge labels are the absolute difference of the labels of the vertices that they are incident to. The labels must be distributed as evenly as possible amongst the vertices and they must also be distributed as uniformly as possible amongst the edges. We study 4–equitable labelings of different trees; we found that all caterpillars, symmetric generalized  $n$ –stars (or symmetric spiders), and complete  $n$ –ary trees for all  $n \in \mathbb{N}$  are 4–equitable. We believe that proving all trees are 4–equitable will bring us one step closer to proving the famous graceful tree conjecture that has been open for half a century. (Received September 17, 2014)