On the edge-length ratio of 2-trees.  

Summary: We study planar straight-line drawings of graphs that minimize the ratio between the length of the longest and the shortest edge. We answer a question of Lazard et al. [Theor. Comput. Sci. 770 (2019), 88–94] and, for any given constant r, we provide a 2-tree which does not admit a planar straight-line drawing with a ratio bounded by r. When the ratio is restricted to adjacent edges only, we prove that any 2-tree admits a planar straight-line drawing whose edge-length ratio is at most $4 + \varepsilon$ for any arbitrarily small $\varepsilon > 0$, hence the upper bound on the local edge-length ratio of partial 2-trees is 4.

MSC:
68R10 Graph theory (including graph drawing) in computer science
68U05 Computer graphics; computational geometry (digital and algorithmic aspects)

Keywords:
planar straight-line drawing; edge-length ratio; 2-tree

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References:

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