Cameron, Helen; **Wood, Derick**

Maximal path length of binary trees. (English) Zbl 0821.68094

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Summary: We further refine the bounds on the path length of binary trees of a given size by considering not only their sizes, but also their heights and fringe thicknesses (the difference between the length of their shortest root-to-leaf paths and their heights). We characterize the maximum-path-length binary trees of a given height, size and fringe thickness, and using this characterization, we give an algorithm to find the maximum-path-length binary trees of a given size and fringe thickness. The proof of the main result is based on two new tree transformations that preserve the height, size, and fringe thickness.

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