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A non-metrizable collectionwise Hausdorff tree with no uncountable chains and no Aronszajn subtrees

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Abstract: It is independent of the usual (ZFC) axioms of set theory whether every collectionwise Hausdorff tree is either metrizable or has an uncountable chain. We show that even if we add "or has an Aronszajn subtree," the statement remains ZFC-independent. This is done by constructing a tree as in the title, using the set-theoretic hypothesis $\diamondsuit^*$, which holds in Gödel's Constructible Universe.

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