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Geometric properties of the monoid $M = \langle L, R \mid LR^2 = RL^2 \rangle$

We discuss geometric properties of the Cayley graph of the monoid $M = \langle L, R \mid LR^2 = RL^2 \rangle$. In this talk, we will describe the distance function on the graph, highlighting its recursive structure, while also characterizing the horofunction boundary, which exhibits a hybrid topology: a Cantor-like set with isolated points situated between each pair of breakpoints.

This monoid M is notable as the first known hyperbolic monoid whose horofunction boundary is not a Cantor set, offering a counterpoint to classical examples.