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Real Cubings

The theory of real trees and groups acting on them has had a deep impact on Group Theory by providing tools to attack new problems, by simplifying proofs of classical results, and by establishing new connections between group theory and geometry, topology, dynamical systems and model theory.

In this talk, we will introduce a new class of metric spaces, called real cubings, which we view as higher-dimensional real trees. We will describe their structure and characterise them from different viewpoints.

As hyperbolic groups are linked to real trees via their asymptotic cone, we will show that real cubings are connected to hierarchically hyperbolic groups, a class of groups that contains right-angled Artin groups and the mapping class groups of closed surfaces.

We will then speculate why we believe that a good theory of groups acting on real cubings is possible. The talk is based on joint work with Montserrat Casals-Ruiz and Mark Hagen.