

## From real trees to real cubings

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Abstract: The notion of a real tree introduced by Chiswell and Tits is a natural generalization of the notion of a simplicial tree. The theory of groups acting on real trees, or Rips' theory, deeply impacted group theory in many different ways: 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 the first part of my talk I shall concentrate on the theory of real trees and present some of the aforementioned connections.

Not surprisingly, finding a higher-dimensional generalisation of the theory of real trees is a long-standing problem. The aim of the second part of my talk will be to sketch how the theory of real trees can be generalized to higher dimensions and to extrapolate some of the links of group theory with other branches discussed in the first part of the talk from dimension one to higher dimensions. To this end we shall introduce a class of spaces that we call real cubings, discuss their properties, their relation to  $CAT(0)$  cube complexes and the structure of groups acting on them.