Selfsimilarities in spaces of real places

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Session: 9. General forms of self-similarity in algebra and topology

Spaces of real places play an important role in real algebra and real algebraic geometry. They appear in all settings where non-archimedean orderings have to be studied. We will show with an easy example that such settings come up in a very natural way.

The first systematic study of real places was done by Serge Lang in 1953. Since then, spaces of real places have been studied by Murray Marshall, Eberhard Becker, Danielle Gondard, Ron Brown and others. But many questions have remained open. It is not known which topological spaces can be represented as spaces of real places, but partial results were obtained in the past few years. In the talk, I will present these results. I will also show an example of a space of real places with an amazingly rich topological and algebraic structure. There are plenty of self-similarities in this space, which has led us to the question whether some sort of fractality can be defined. The spaces we study are not necessarily metric, and therefore their natural topology is not easy to handle.