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FAKULTÄT FÜR MATHEMATIK
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Einladung zur öffentlichen Defensio von

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Thema der Dissertation:

Accessible points of some planar continua

Abstract:

Inverse limit spaces of unimodal maps have triggered a substantial amount of mathematical research in the last three decades and the topology of the spaces is almost fully understood. One of the main reasons to study inverse limits is the fact that they present a natural way to model attractors of chaotic dynamical systems and can thus give a valuable insight in the topological structure of the attractors of important dynamical systems.

The question which served as the main motivation for my thesis was posed by the topologist and dynamicist Philip Boyland. Originating from the interest in Dynamical System he asked if there exist planar embeddings of inverse limit spaces of unimodal maps that are not equivalent to the standard two embeddings constructed by Brucks, Diamond and Bruin respectively in the early 1990's.

In my thesis, a construction of uncountably many pairwise non-equivalent planar embeddings of inverse limit spaces of unimodal maps is given. Specifically, for every point in the inverse limit space of a unimodal map we construct a planar embedding of this space which makes the given point accessible from the complement of the space. Furthermore, we partially characterize the accessible points in the constructed embeddings and show that the constructed embeddings are unlike the already known ones in the sense that the natural shift homeomorphism cannot be extended to the whole plane. Furthermore, the full characterization of sets of accessible points and the prime end structure of the two standard embeddings is given.

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