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Rigidity and Mapping Class Group for Self-Similar Tiling Spaces

For translation actions on tiling spaces associated to self-similar tilings, we show that existence of a homeomorphism between the spaces implies conjugacy of the actions up to a linear rescaling. We also introduce the general linear group of a tiling, prove its discreteness, and show that it is naturally isomorphic with the (pointed) mapping class group of the tiling space. To illustrate our theory, we compute the mapping class group for a five-fold symmetric Penrose tiling.