Abstract: "Gähler-Anderson-Putnam graphs of 1-dimensional Delone sets of finite local complexity"

Anderson and Putnam [AP] show that substitution tilings of $\mathbb{R}^d$ can be seen as inverse limit spaces. More precisely, starting with a dynamical system corresponding to a substitution tiling a CW-complex is constructed leading to an inverse limit space endowed with an action. As it turns out this dynamical systems are topological conjugated. This construction is used to compute the Cech cohomology and the K-theory of this spaces. Moreover, Bellissard, Benedetti and Gambaudo [BBG] applied the inverse limit method to tilings, not necesseraily arising by substitution, to get results as gab-labeling theorems.

We will provide a combinatorial version of 1-dimensional Anderson-Putnam Complexes satisfying a finite pattern condition. In order to do so, we give an introduction in the encoding of Delone sets of finite local complexity as two-sided infinite words. After introducing basic notations in graph theory we define the Gähler-Anderson-Putnam graphs associated to a dynamical system of tilings and discuss their properties. Especially, we will have a closer look to the complexity function and its relation to the branching points of the Gähler-Anderson-Putnam graph. Finally, we will discuss the relations of the branching points to 1-dimensional Schrödinger operators and the role of the Gähler-Anderson-Putnam graphs.

[AP] J. E. Anderson and I. F. Putnam, *Topological invariants for substitution tilings and their associated C^*-algebras*, Ergodic Theory & Dynamical Systems **18** (1998), 509-537.

[BBG] J. Bellissard, R. Benedetti and J.-M. Gambaudo, *Spaces of tilings, finite telescopic approximations and gap-labelling*, Communications in Mathematical Physics **261** (2006), 1-41 .