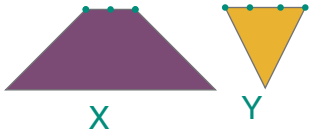
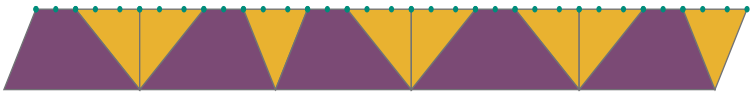
How substitutions and hyperbolic tilings---periodic or not--- are related.

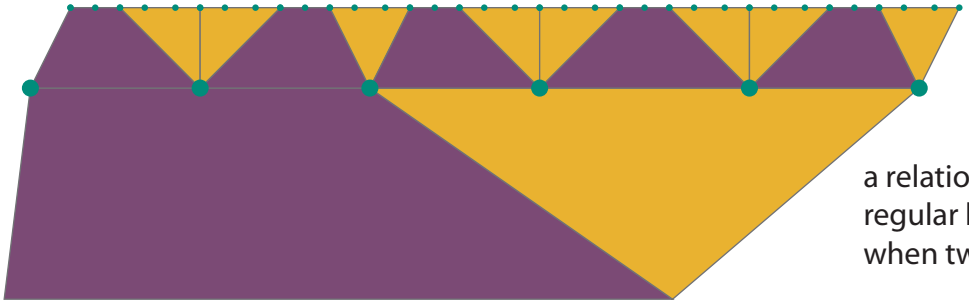


letters describe local configurations



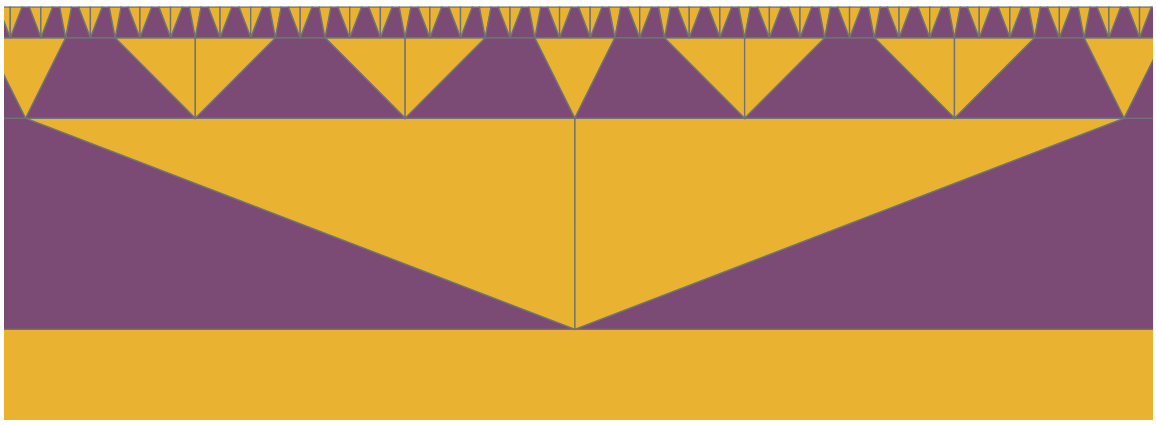
X YYXYXYYXYYXY

words describe configurations along a curve
locally sensible configurations are described by words in a regular language

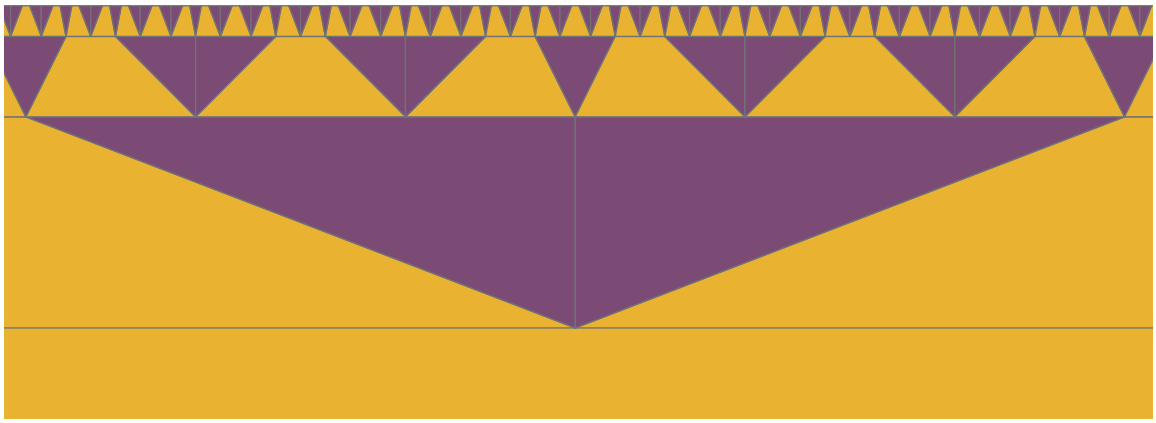


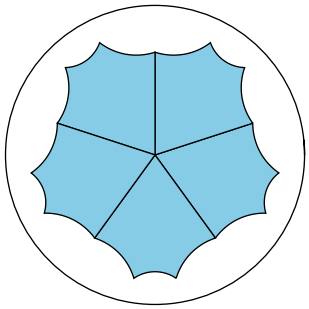
XY -> XYYXYXYYXYYXY

a relation on words in this regular language describes when two strips can fit together.



a bi-infinite orbit under this relation, on the bi-infinite words in the language corresponds to an abstract complex with the correct local combinatorics.

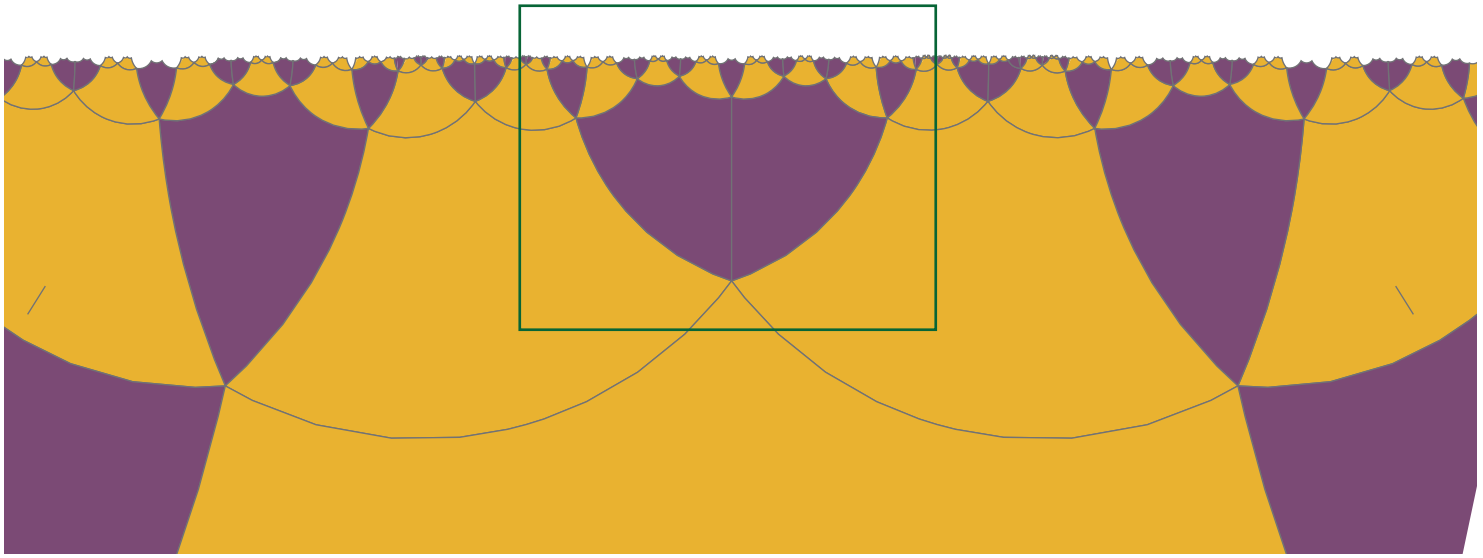




We began with a local geometric realization of the desired combinatorial structure.

We simply use this to chart a geometry onto the complex.

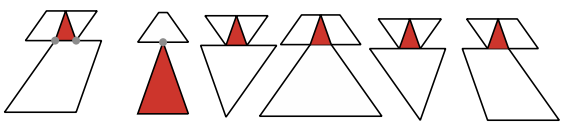
Voila!



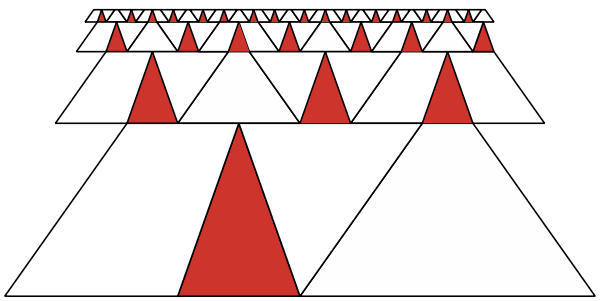
A weakly aperiodic archimedean tiling as an application

5.5.5.3

discovered by C. Marek



the alphabet, rules and language



a bit of the complex