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Structural aspects of tilings. (English) [Zbl 1258.05023](#)

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Summary: In this paper, we study the structure of the set of tilings produced by any given tile-set. For a better understanding this structure, we address the set of finite patterns that each tiling contains.

This set of patterns can be analyzed in two different contexts: the first one is combinatorial and the other topological. These two approaches have independent merits and, once combined, provide somehow surprising results.

The particular case where the set of produced tilings is countable is deeply investigated while we prove that the uncountable case may have a completely different structure.

We introduce a pattern preorder and also make use of Cantor-Bendixson rank. Our first main result is that a tile-set that produces only periodic tilings produces only a finite number of them. Our second main result exhibits a tiling with exactly one vector of periodicity in the countable case.

For the entire collection see [\[Zbl 1213.68020\]](#).

MSC:

[05B45](#) Combinatorial aspects of tessellation and tiling problems
[03E05](#) Other combinatorial set theory

Cited in **6** Documents

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