

Results on Tilings with Walkup Structure and Their Properties

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We present the works on a specific dodecamond (connected figure of 12 unit equilateral triangles) and prove that its tilings have structures analogous to the structure of the T-tetrominoes, presented by D.W. Walkup. Such strong restriction on the tilings is extremely rare in combinatorial geometry but it lets us find connection to chain graphs and via them - to enumerate the tilings of a given region. The approach is similar to Walkup’s, based on a two-level induction over a triangular lattice. One of the main technical difficulties here is the large numbers of cases which have to be examined, which led us to developing a dynamic geometrical tool.