

**The tiling problem using simple and multidimensional
continued fractions**

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Consider a table of length $(n + 1)$ and suppose to have pieces of sizes 1×1 , called squares, or 2×1 , called dominoes. Moreover, it is also possible to stack up pieces of the same size, up to a certain threshold value, called height condition, that depends on the tile (or tiles) considered. The tiling problem is to count the number of full coverings (or tilings) of the table. The answer to this problem is linked to some properties of continued fractions. Later, Balof showed an explicit isomorphism between the tilings with special height conditions and permutations, while Flajolet addressed similar problems from an analytic point of view. In this talk I will show how to recover a solution for the tiling problem, as well as introduce several generalizations that involve more advanced topics in the theory of continued fractions. Finally, I will present a version of this problem on multidimensional continued fractions, providing also a new interpretation of the tiling problem in this setting.