

On fair triangulations of polygons and polyhedra

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Abstract

A convex partition of a polygon P is a finite set of convex polygons such that the interiors of the polygons do not intersect and the union of the polygons is equal to the original polygon P . The desire to create optimal partitions of a given convex polygon furnished a number of problems in discrete geometry. The properties used in optimization among others include equal area, equal perimeter and the number of pieces. The concept of fair partitions commonly refers to problems where simultaneously several properties need to be optimized. Variations of the cake-cutting problem are the most known problems among these. This talk surveys some of the $2D$ and $3D$ results and introduces some new variants. We are particularly interested in optimization problems which are restricted to triangulations only.