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An overview of the theory of flexible polyhedra

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Resumo

A boundary-free compact polyhedral surface in 3-dimensional Euclidean space is called a polyhedron for short. A polyhedron is said to be flexible if its spatial shape can be changed continuously by changing its dihedral angles only, i.e., can be changed by such a continuous deformation in which every face remains congruent to itself. Such a deformation is called a flex.

In this talk we will present basic facts and modern state of the art of the theory of flexible polyhedra. Among other things, we will explain that flexible polyhedra (a) do exist; (b) are rare objects; (c) keep unaltered each of the following quantities during the flex: total mean curvature, volume, and Dehn invariants.

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