The Thurston norm of 2-bridge link complements

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Résumé

Thurston norm is a seminorm (a norm in most interesting cases) associated with the second real homology of a compact orientable 3-manifold. The unit ball of this norm is a convex polyhedron, whose shape's data (e.g. number of vertices, regularity) measures the complexity of the surfaces sitting in the ambient 3-manifold. For instance, the Thurston norm of link complements generalizes the Seifert genus and, in general manifolds, a surface realizes the norm among its class if and only if it is the leaf of a taut foliation of the ambient 3-manifold. Unfortunately, Thurston norm is generally quite hard to compute, and just a little is known about the possible shapes of its unit ball. After briefly introducing the Thurston norm and some of its main properties, we will sketch how to compute it in the case of 2-bridge link complements in S^3, by showing that the Thurston ball has at most 8 faces. As a corollary, we will show that the Thurston ball of a 2-component link in S^3 can be arbitrarily complicated, with the number of vertices as big as desired.

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