

An introduction to ideal simplicial volume

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Abstract

Simplicial volume is a homotopy invariant of compact manifolds introduced in 1982 by Gromov in his seminal paper "Volume and Bounded Cohomology". Roughly speaking, the simplicial volume measures the complexity of a manifold in terms of real singular chains.

In this talk, we will define the *ideal simplicial volume*, a variation of the ordinary simplicial volume for compact manifolds with boundary. The main difference between ideal simplicial volume and the ordinary simplicial volume of a manifold M is that this new invariant measures the minimal size of possibly ideal triangulations of M "with real coefficients", since ideal simplices are now allowed to appear in representatives of the fundamental class.

After having discussed the main properties of the ideal simplicial volume, we will see that that for manifolds whose boundary components all have an amenable fundamental group, the ideal simplicial volume coincides with the classical one.

Finally, if we have enough time, we will discuss the precise computation of the ideal simplicial volume of an infinite family of hyperbolic 3-manifolds with geodesic boundary, for which the exact value of the classical simplicial volume is not known.

This is a joint work with Roberto Frigerio