

The proportionality principle via bounded cohomology

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Abstract: In Filippo Sarti's talk we have seen a geometric proof of Gromov's proportionality principle, a classical result that establishes a connection between the topology of a closed Riemannian manifold (namely, its simplicial volume) and its geometric structure. In this chapter we will present a more *algebraic* proof, relying heavily on the isometric isomorphism between singular and continuous cohomology. Our strategy involves finding a specific continuous cohomology class (the *volume coclass*), whose ℓ^∞ -seminorm will determine the proportionality constant between Riemannian and simplicial volume. Finally, as an application, we will compute this constant for hyperbolic manifolds, showing that their simplicial volume is non-vanishing.