

About the Dual Bonahon-Schläfli formula

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*Young Mathematicians Symposium of the Greater Region, Nancy,
France*

September 24-25, 2018

Abstract Let $(P_t)_t$ be a 1-parameter family of polyhedra in the 3-dimensional hyperbolic space \mathbb{H}^3 , obtained by considering a perturbation of their vertices. The classical *Schläfli formula* is a relation between the derivative of the volume $\frac{d \text{Vol}(P_t)}{dt}$ and the variation of the geometry of the edges in their boundaries $(\partial P_t)_t$ (it has analogous statements in any dimensions and in constant positive curvature too, see [2]). In [1], Bonahon proved a similar result to a deformation of "special" convex subsets sitting inside "special" 3-dimensional hyperbolic manifolds. More precisely, he described a variation formula for the volume of the convex cores $(CM_t)_t$ of a differentiable family of quasi-Fuchsian manifolds $(M_t)_t$ in terms of the variation of the geometry of ∂CM_t . In this talk I will introduce the setting to state the Bonahon's analogue applied to the notion of *dual volume* of convex domains sitting inside hyperbolic 3-manifolds, and I will discuss about the relations between the dual and the ordinary settings.

References

- [1] Francis Bonahon. "A Schläfli-type formula for convex cores of hyperbolic 3-manifolds". In: *J. Differential Geom.* 50.1 (1998), pp. 25–58. DOI: 10.4310/jdg/1214510045. URL: <https://doi.org/10.4310/jdg/1214510045>.
- [2] E.B. Vinberg et al. *Geometry II: Spaces of Constant Curvature*. Encyclopaedia of Mathematical Sciences. Springer Berlin Heidelberg, 2013. ISBN: 9783662029015.