

## On volumes of hyperbolic polyhedra and hyperbolic knot complements

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**Abstract.** Volume is a useful invariant of a hyperbolic 3-manifold which can be estimated from its polyhedral decomposition. By Belletti theorem [1] the exact upper bound for the volumes of generalized hyperbolic polyhedra with the same one-dimensional skeleton  $G$  equals the volume of an ideal right-angled hyperbolic polyhedron whose one-dimensional skeleton is the medial graph for  $G$ . We will discuss the volume bounds obtained in [2] for ideal right-angled hyperbolic polyhedra and in [3] for generalized hyperbolic polyhedra. The bounds depend linearly of the number of edges of a polyhedron. As an application we get the new upper bound for volumes of hyperbolic complements of links with more than eight twists in diagrams.

### References

- [1] **G. Belletti.** The maximum volume of hyperbolic polyhedra. *Trans. Amer. Math. Soc.*, 2021, 374, 1125-1153.
- [2] **S. Alexandrov, N. Bogachev, A. Egorov, A. Vesnin.** On volumes of hyperbolic right-angled polyhedra. *Sbornik: Mathematics*, 2023, 214(2), 148-165.
- [3] **A. Vesnin, A. Egorov.** Upper bounds for volumes of generalized hyperbolic polyhedra and hyperbolic links. *Siberian Mathematical Journal*, 2024, 65(3), 469-488.