

Polytopes, successive minima, and the Gaussian divergence theorem

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ABSTRACT

We show that polytopes with centroid at the origin satisfy the so-called subspace-concentration-condition (scd). This has several consequences:

- a) the “U-conjecture” regarding cone-volumes of polytopes is correct,
- b) the scd is a necessary condition for the (in general still open) logarithmic Minkowski problem. This extends partially recent results obtained in the symmetric setting by Böröczky et al. [1],
- c) the sum of the roots of an Ehrhart polynomial of a lattice polytope is bounded from above by the sum of its Minkowskian successive minima.

The main tool for the proof of the scd is a polytopal version of the Gaussian divergence theorem.

Most of the presented results are part of a joint work with Eva Linke [2].

[1] Károly J. Böröczky, Erwin Lutwak, Deane Yang, und Gaoyong Zhang, *The logarithmic Minkowski problem*, *JAMS* 26(3), 2013.

[2] Martin Henk und Eva Linke, *Cone volume measures of polytopes*, [arXiv:1305.5335](https://arxiv.org/abs/1305.5335), *Advances in Mathematics* (to appear).

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