Institut für Geometrie
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Einladung zum Vortrag von

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Solution of Polyhedra

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Abstract. Analogous to the term *solution of triangles* we use *solution of polyhedra* for problems concerning the computation of geometric characteristics of a polyhedron from its inner metric and combinatorial structure. We show that both volume and diagonals of an orientable polyhedron P (with triangular faces) are roots of certain polynomial equations whose coefficients are completely determined by the combinatorial structure and the edge lengths of P. Moreover, the polynomials for the volume are *monic*, i.e., their leading coefficient equals 1. Therefore the volume of all polyhedra with the same combinatorial structure and the same edge lengths will always assume only a finite number of values. This gives us a positive solution of the so-called *bellows conjecture* stating the invariance of volume of a flexible polyhedron during its flexion.

The existence of such polynomial equations allso affects questions concerning isometric immersions and rigidity of polyhedra. This presentation will consider such applications and also many open questions related to volume polynomials for polyhedra.