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Drucker, Daniel

A comprehensive Pythagorean theorem for all dimensions.

Am. Math. Mon. 122, No. 2, 164-168 (2015).

It is shown that the squared n-dimensional volume of an n-dimensional parallelotope in $\mathbb{R}^m$, multiplied by $\binom{m-n}{k-n}$, equals the sum of squared n-dimensional volumes of all projections of the polytope to k-dimensional coordinate subspaces. The proof is a simple application of the Cauchy-Binet determinantal formula.

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