Uniform flag triangulations of the Legendre polytope

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Abstract

The Legendre polytope is the convex hull of all pairwise differences of the basis vectors, also known as the full root polytope of type A. We describe all flag triangulations of this polytope that are uniform in the sense that the edges may be described as a function of the relative order of the indices of the four basis vectors involved. We also determine the refined face counts of these triangulations that keeps track of the number of forward and backward arrows in each face.

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