

Also available at <http://amc-journal.eu>  
ISSN 1855-3966 (printed edn.), ISSN 1855-3974 (electronic edn.)  
Ars Mathematica Contemporanea Volume 7, Issue 1, Year 2014, Pages 30-38

## **Polytopes associated to dihedral groups**

Barbara Baumeister, Christian Haase, Benjamin Nill, Andreas  
Paffenholz

### **Abstract**

In this note we investigate the convex hull of those  $n \times n$  permutation matrices that correspond to symmetries of a regular  $n$ -gon. We give the complete facet description. As an application, we show that this yields a Gorenstein polytope, and we determine the Ehrhart  $h^*$ -vector.

### **Keywords**

Permutation polytopes, dihedral groups, lattice polytopes

Math. Subj. Class.: [52B12](#) [05E10](#) [20B35](#) [52B05](#) [52B20](#)

# **Politopi, prirejeni diedrskim grupam**

Barbara Baumeister, Christian Haase, Benjamin Nill, Andreas Paffenholz

## **Povzetek**

V članku raziščemo konveksno lupino tistih  $n \times n$  permutacijskih matrik, ki ustrezajo simetrijam pravilnega  $n$ -kotnika. Podamo kompleten opis faset. Kot primer uporabe pokažemo, da tako dobimo Gorensteinov politop in določimo Ehrhartov  $h^*$ -vector.

## **Ključne besede**

Permutacijski politop, diedrske grupe, mrežni politopi