



Also available at <http://amc-journal.eu>  
ISSN 1855-3966 (printed ed.) ISSN 1855-3974 (electronic edn.)  
ARS MATHEMATICA CONTEMPORANEA 13 (2017) 227–234

## Counting faces of graphical zonotopes\*

Vladimir Grujić<sup>†</sup>

*University of Belgrade, Faculty of Mathematics,  
Studentski trg 16, Belgrade, Serbia*

**Abstract:** It is a classical fact that the number of vertices of the graphical zonotope  $Z_\Gamma$  is equal to the number of acyclic orientations of a graph  $\Gamma$ . We show that the  $f$ -polynomial of  $Z_\Gamma$  is obtained as the principal specialization of the  $q$ -analog of the chromatic symmetric function of  $\Gamma$ .

**Keywords:** Graphical zonotope,  $f$ -vector, graphical matroid, symmetric function.

Math. Subj. Class.: 05E05, 52B05, 16T05

---

\*Author is supported by Ministry of Education, Science and Technological developments of Republic of Serbia, Project 174034.

<sup>†</sup>*E-mail address:* [vgrujic@matf.bg.ac.rs](mailto:vgrujic@matf.bg.ac.rs) (Vladimir Grujić).



Dostopno tudi na <http://amc-journal.eu>  
ISSN 1855-3966 (tiskana izd.) ISSN 1855-3974 (elektronska izd.)  
ARS MATHEMATICA CONTEMPORANEA 13 (2017) 227–234

## Preštevanje lic grafovskih zonotopov\*

Vladimir Grujić<sup>†</sup>

*University of Belgrade, Faculty of Mathematics,  
Studentski trg 16, Belgrade, Serbia*

**Povzetek:** Klasičen rezultat je, da je število vozlišč grafovskega zonotopa  $Z_\Gamma$  enako številu acikličnih orientacij grafa  $\Gamma$ . Pokažemo, da je  $f$ -polinom zonotopa  $Z_\Gamma$  glavna specializacija  $q$ -analoga kromatične simetrične funkcije grafa  $\Gamma$ .

**Ključne besede:** Grafovski zonotop,  $f$ -vektor, grafovski matroid, simetrična funkcija.

Math. Subj. Class.: 05E05, 52B05, 16T05

---

\*Avtor je podprt s strani Ministry of Education, Science and Technological developments of Republic of Serbia, Project 174034.

<sup>†</sup>*E-poštni naslov:* [vgrujic@matf.bg.ac.rs](mailto:vgrujic@matf.bg.ac.rs) (Vladimir Grujić).