ISSN 1855-3966 (printed edn.), ISSN 1855-3974 (electronic edn.)
ARS MATHEMATICA CONTEMPORANEA 23 (2023) #P3.07
https://doi.org/10.26493/1855-3974.2573.90d
(Also available at http://amc-journal.eu)

On the existence of zero-sum perfect matchings of complete graphs

Teeradej Kittipassorn, Panon Sinsap *

Department of Mathematics and Computer Science, Faculty of Science, Chulalongkorn University, Bangkok, Thailand

Received 28 February 2021, accepted 28 August 2022, published online 24 January 2023

Abstract

In this paper, we prove that given a 2-edge-coloured complete graph K_{4n} that has the same number of edges of each colour, we can always find a perfect matching with an equal number of edges of each colour. This solves a problem posed by Caro, Hansberg, Lauri, and Zarb. The problem is also independently solved by Ehard, Mohr, and Rautenbach.

Keywords: Graphs, zero-sum perfect matching.

Math. Subj. Class. (2020): 05C15

*Corresponding author.
E-mail addresses: teeradej.k@chula.ac.th (Teeradej Kittipassorn), panon.sinsap@gmail.com (Panon Sinsap)

ISSN 1855-3966 (tiskana izd.), ISSN 1855-3974 (elektronska izd.)
ARS MATHEMATICA CONTEMPORANEA 23 (2023) #P3.07
https://doi.org/10.26493/1855-3974.2573.90d
(Dostopno tudi na http://amc-journal.eu)

Obstoj popolnih prirejanj z ničelno vsoto v polnih grafih

Teeradej Kittipassorn, Panon Sinsap *

Department of Mathematics and Computer Science, Faculty of Science, Chulalongkorn University, Bangkok, Thailand

Prejeto 28. februarja 2021, sprejeto 28. avgusta 2022, objavljeno na spletu 24. januarja 2023

Povzetek

V tem članku dokažemo, da lahko za vsak polni graf K_{4n}, katerega povezave so pobarvane z dvema barvama, pri čemer je število povezav vsake barve enako, vselej najdemo popolno prirejanje, v katerem je število povezav vsake barve enako. To reši problem, ki so ga zastavili Caro, Hansberg, Lauri in Zarb. Ta problem so neodvisno rešili tudi Ehard, Mohr in Rautenbach.

Ključne besede: Grafi, popolno prirejanje z ničelno vsoto.

Math. Subj. Class. (2020): 05C15

*Kontaktni avtor.
E-poštna naslova: teeradej.k@chula.ac.th (Teeradej Kittipassorn), panon.sinsap@gmail.com (Panon Sinsap)