

On the automorphisms of a family of small q -regular graphs of girth 8^*

Štefan Gyürki[†] 

*Department of Mathematics and Descriptive Geometry, Faculty of Civil Engineering,
Slovak University of Technology, 810 05 Bratislava, Slovak Republic*

Pavol Jánoš 

*Institute of Information Engineering, Automation, and Mathematics,
Faculty of Chemical and Food Technology, Slovak University of Technology,
812 37 Bratislava, Slovak Republic*

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Abstract

In this paper we investigate the automorphisms of a family of small $(q, 8)$ -graphs of order $2q^3 - 2q$ which are obtained as induced subgraphs of the incidence graph of the classical generalized quadrangle of order q . We show that for q an odd prime power, the automorphism group has four orbits on the set of vertices, thus the investigated graphs cannot be Cayley graphs or lifts of a dipole.

Keywords: Cages, girth, voltage assignments.

Math. Subj. Class.: 05C35

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[†]Corresponding author.

E-mail addresses: stefan.gyurki@stuba.sk (Štefan Gyürki), pavol.janos@stuba.sk (Pavol Jánoš)



O avtomorfizmih neke družine majhnih q -regularnih grafov ožine 8^*

Štefan Gyürki[†] 

*Department of Mathematics and Descriptive Geometry, Faculty of Civil Engineering,
Slovak University of Technology, 810 05 Bratislava, Slovak Republic*

Pavol Jánoš 

*Institute of Information Engineering, Automation, and Mathematics,
Faculty of Chemical and Food Technology, Slovak University of Technology,
812 37 Bratislava, Slovak Republic*

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Povzetek

V tem članku preučujemo avtomorfizme družine majhnih $(q, 8)$ -grafov reda $2q^3 - 2q$, ki jih dobimo kot inducirane podgrafe incidenčnega grafa klasičnega posplošenega štirikotnika reda q . Dokažemo: če je q potenca lihega praštevila, potem ima ustrezna grupa avtomorfizmov štiri orbite na množici vozlišč, torej preučevani grafi ne morejo biti Cayleyevi grafi ali dvigi dipola.

Ključne besede: Kletke, ožina, voltažno prirejanje.

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[†]Kontaktni avtor.

E-poštna naslova: stefan.gyurki@stuba.sk (Štefan Gyürki), pavol.janos@stuba.sk (Pavol Jánoš)