

Reflexible complete regular dessins and antibalanced skew morphisms of cyclic groups

Kan Hu* 

Department of Mathematics, Zhejiang Ocean University,
Zhoushan, Zhejiang 316022, P.R. China

Young Soo Kwon† 

Department of Mathematics, Yeungnam University,
Kyeongsan, 712-749, Republic of Korea

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Abstract

A skew morphism of a finite group A is a bijection φ on A fixing the identity element of A and for which there exists an integer-valued function π on A such that $\varphi(ab) = \varphi(a)\varphi^{\pi(a)}(b)$, for all $a, b \in A$. In addition, if $\varphi^{-1}(a) = \varphi(a^{-1})^{-1}$, for all $a \in A$, then φ is called antibalanced. In this paper we develop a general theory of antibalanced skew morphisms and establish a one-to-one correspondence between reciprocal pairs of antibalanced skew morphisms of the cyclic additive groups and isomorphism classes of reflexible regular dessins with complete bipartite underlying graphs. As an application, reflexible complete regular regular dessins are classified.

Keywords: Graph embedding, antibalanced skew morphism, reciprocal pair.

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E-mail addresses: hukan@zjou.edu.cn (Kan Hu), ysookwon@ynu.ac.kr (Young Soo Kwon)

Refleksibilne polne regularne risbe in neuravnoteženi poševni morfizmi cikličnih grup

Kan Hu* *Department of Mathematics, Zhejiang Ocean University,
Zhoushan, Zhejiang 316022, P.R. China*Young Soo Kwon† *Department of Mathematics, Yeungnam University,
Kyeongsan, 712-749, Republic of Korea*

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Povzetek

Poševni morfizem končne grupe A je bijekcija φ na A , ki fiksira identiteto grupe A in za katero obstaja funkcija s celoštevilskimi vrednostmi π na A tako da je $\varphi(ab) = \varphi(a)\varphi^{\pi(a)}(b)$, za vse $a, b \in A$. Če poleg tega velja $\varphi^{-1}(a) = \varphi(a^{-1})^{-1}$, za vse $a \in A$, potem se φ imenuje neuravnotežen. V tem članku razvijemo splošno teorijo neuravnoteženih poševnih morfizmov in vpeljemo bijektivno korespondenco med recipročnimi pari neuravnoteženih poševnih morfizmov cikličnih aditivnih grup in izomorfnoznimi razredi refleksibilnih regularnih risb s polnimi dvodelnimi osnovnimi grafi. Kot primer aplikacije te teorije klasificiramo refleksibilne polne regularne risbe.

Ključne besede: Vložitev grafa, neuravnotežen poševni morfizem, recipročni par.*Math. Subj. Class.:* 20B25, 05C10, 14H57

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E-poštna naslova: hukan@zjou.edu.cn (Kan Hu), ysookwon@ynu.ac.kr (Young Soo Kwon)