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Regular self-dual and self-Petrie-dual maps of arbitrary valency*

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Abstract

The existence of a regular, self-dual and self-Petrie-dual map of any given even valency has been proved by D. Archdeacon, M. Conder and J. Širáň (2014). In this paper we extend this result to any odd valency ≥ 5. This is done using algebraic number theory and maps defined on the groups $\mathrm{PSL}(2, p)$ in the case of odd prime valency ≥ 5 and valency 9, and using coverings for the remaining odd valencies.

Keywords: Regular map, automorphism group, self-dual map, self-Petrie-dual map.

Math. Subj. Class.: 05C25, 05C10

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Regularni sebi-dualni in sebi-Petriejevo-dualni zemljevidi poljubne stopnje*

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Povzetek

Obstoj regularnega, sebi-dualnega in sebi-Petriejevo-dualnega zemljevida poljubne sode stopnje so dokazali D. Archdeacon, M. Conder in J. Širáň (2014). V tem članku razširimo ta rezultat na poljubno liho stopnjo ≥ 5. To storimo z uporabo algebraične teorije števil in zemljevidov, definiranih na grupah $\mathrm{PSL}(2, p)$ v primeru lihe praštevilske stopnje ≥ 5 in valence 9, za ostale lihe stopnje pa z uporabo krovnih preslikav.

Ključne besede: Regularni zemljevid, grupa avtomorfizmov, sebi-dualen zemljevid, sebi-Petriejevo-dualen zemljevid.

Math. Subj. Class.: 05C25, 05C10

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