

Algebraic degrees of 2-Cayley digraphs over abelian groups*

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Abstract

A digraph Γ is called a 2-Cayley digraph over a group G if there exists a 2-orbit semiregular subgroup of $\text{Aut}(\Gamma)$ isomorphic to G . In this paper, we completely determine the algebraic degrees of 2-Cayley digraphs over abelian groups. This generalizes the main results of Lu and Mönius in 2023. As applications, we consider the algebraic degrees of Cayley digraphs over finite groups admitting an abelian subgroup of index 2. Special attention is paid to the algebraic degrees of Cayley (di)graphs over generalized dihedral groups, generalized dicyclic groups and semi-dihedral groups.

Keywords: Algebraic degree, 2-Cayley digraph, Abelian group.

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Algebraične stopnje 2-Cayleyjevih digrafov abelskih grup*

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Povzetek

Digraf Γ se imenuje 2-Cayleyjev digraf grupe G , če obstaja 2-orbitna semiregularna podgrupa $\text{Aut}(\Gamma)$, izomorfna G . V tem članku v celoti določimo algebraične stopnje 2-Cayleyjevih digrafov abelskih grup. To je posplošitev glavnih rezultatov Luja in Möniusa iz leta 2023. Kot aplikacije obravnavamo algebraične stopnje Cayleyjevih digrafov končnih grup, ki dopuščajo abelsko podgrupo indeksa 2. Posebno pozornost namenjamo algebraičnim stopnjam Cayleyjevih (di)grafov posplošenih diedrskih grup, posplošenih dicikličnih grup in semidiedrskih grup.

Ključne besede: Algebraična stopnja, 2-Cayleyjev digraf, abelska grupa.

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