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Bounding s for vertex-primitive s-arc-transitive digraphs of alternating and symmetric groups*

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Abstract

Determining an upper bound on s for finite vertex-primitive s-arc-transitive digraphs has received considerable attention dating back to a question of Praeger in 1990. It was shown by Giudici and Xia that the smallest upper bound on s is attained for some digraph admitting an almost simple s-arc-transitive group. In this paper, based on the work of Pan, Wu and Yin, we prove that $s \leqslant 2$ in the case where the group is an alternating or symmetric group.

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Keywords: Digraph, vertex-primitive, s-arc-transitive, alternating group, symmetric group.
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Določanje zgornje meje za s pri točkovno primitivnih s-ločno tranzitivnih digrafih alternirajočih in simetričnih grup*

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Povzetek

Določanje zgornje meje za s pri končnih točkovno primitivnih s-ločno tranzitivnih digrafih je bilo vse od vprašanja Praegerjeve iz leta 1990 deležno precejšnje pozornosti. Giudici in Xia sta dokazala, da je najmanjša zgornja meja s dosežena pri nekem digrafu, ki dopušča skoraj enostavno s-ločno tranzitivno grupo. V tem članku na podlagi dela Pana,

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Wuja in Yina dokažemo, da je $s \leqslant 2$ v primeru, ko je grupa alternirajoča ali simetrična grupa.

Ključne besede: Digraf, točkovno primitiven, s-ločno tranzitiven, alternirajoča grupa, simetrijska grupa.

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