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A note on the directed genus of $K_{n,n,n}$ and K_n

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Abstract: It is proved that a complete graph K_n can have an orientation whose minimum directed genus is $\lceil \frac{1}{12}(n-3)(n-4) \rceil$ if and only if $n \equiv 3, 7 \pmod{12}$. This answers a question of Bonnington et al. by using a method different from current graphs. It is also proved that a complete symmetric tripartite graph $K_{n,n,n}$ has an orientation whose minimum directed genus is $\frac{1}{2}(n-1)(n-2)$.

Keywords: Digraph, complete tripartite graph, directed genus, surfaces.

Math. Subj. Class.: 05C10, 05B05, 05B07

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Opomba o usmerjenem rodu grafov $K_{n,n,n}$ in K_n

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Povzetek: Dokažemo, da lahko polni graf K_n orientiramo tako, da bo njegov minimalni usmerjeni rod enak $\lceil \frac{1}{12}(n-3)(n-4) \rceil$ natanko takrat, ko je $n \equiv 3, 7 \pmod{12}$. To odgovori na vprašanje Bonningtona in drugih, z uporabo drugačne metode od tokovnih grafov. Dokažemo tudi, da ima polni simetrični tridelni graf $K_{n,n,n}$ orientacijo, katere minimalni usmerjeni rod je $\frac{1}{2}(n-1)(n-2)$.

Ključne besede: Usmerjeni graf, polni tridelni graf, usmerjeni rod, ploskve.

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