The 4-girth-thickness of the complete graph

Christian Rubio-Montiel*

UMI LAFMIA 3175 CNRS at CINVESTAV-IPN, 07300, Mexico City, Mexico
División de Matemáticas e Ingeniería, FES Ac-UNAM, 53150, Naucalpan, Mexico

Abstract: In this paper, we define the 4-girth-thickness \( \theta(4, G) \) of a graph \( G \) as the minimum number of planar subgraphs of girth at least 4 whose union is \( G \). We prove that the 4-girth-thickness of an arbitrary complete graph \( K_n \), \( \theta(4, K_n) \), is \( \left\lceil \frac{n+2}{4} \right\rceil \) for \( n \neq 6, 10 \) and \( \theta(4, K_6) = 3 \).

Keywords: Thickness, planar decomposition, girth, complete graph.

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*E-mail address: christian@cs.cinvestav.mx (Christian Rubio-Montiel)
4-debelina ožine polnega grafa

Christian Rubio-Montiel

UMI LAFMIA 3175 CNRS at CINVESTAV-IPN, 07300, Mexico City, Mexico
División de Matemáticas e Ingeniería, FES Ac-UNAM, 53150, Naulcalpan, Mexico

Povzetek: V tem članku definiramo 4-debelino ožine $\theta(4,G)$ grafa $G$ kot najmanjše število ravninskih podgrafov ožine najmanj 4, katerih unija je $G$. Dokažemo, da je 4-debelina ožine poljubnega polnega grafa $K_n$, tj. $\theta(4,K_n)$, enaka $\left\lceil \frac{n+2}{4} \right\rceil$ za $n \neq 6,10$ in $\theta(4,K_6) = 3$. 

Ključne besede: Debelina, ravninska dekompozicija, ožina, polni graf.

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*E-poštni naslov: christian@cs.cinvestav.mx (Christian Rubio-Montiel)