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Small cycles in the Pancake graph

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Abstract

The Pancake graph is well known because of the open Pancake problem. It has the structure that any l–cycle, $6 \leq l \leq n!$, can be embedded in the Pancake graph $P_n, n \geq 3$. Recently it was shown that there are exactly $n! / 6$ independent 6–cycles and $n!(n - 3)$ distinct 7–cycles in the graph. In this paper we characterize all distinct 8–cycles by giving their canonical forms as products of generating elements. It is shown that there are exactly $n!(n^3 + 12n^2 - 103n + 176) / 16$ distinct 8–cycles in $P_n, n \geq 4$. A maximal set of independent 8–cycles contains $n! / 8$ of these.

Keywords

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Majhni cikli v palačinkastem grafu

Abstract

Palačinkasti graf je dobro znan zaradi odprtega istoimenskega problema. Ima takšno strukturo, da je poljuben l–cikel $6 \leq l \leq n!$ mogoče vložiti v palačinkasti graf $P_n, n \geq 3$. Nedavno je bilo pokazano, da obstaja natanko $n! / 6$ neodvisnih 6–ciklov in $n!(n - 3)$ različnih 7–ciklov v tem grafu. V tem članku karakteriziramo vse različne 8–cikle na ta način, da izrazimo njihove kanonične forme kot produkte generatorjev. Pokažemo, da obstaja natanko $n!(n^3 + 12n^2 - 103n + 176) / 16$ različnih 8–ciklov v $P_n, n \geq 4$. Maksimalna množica neodvisnih 8–ciklov vsebuje $n! / 8$ teh ciklov.

Ključne besede