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PANCYCLICITY WHEN EACH CYCLE MUST PASS EXACTLY k HAMILTON CYCLE CHORDS

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Abstract

It is known that $\Theta(\log n)$ chords must be added to an n-cycle to produce a pancyclic graph; for vertex pancyclicity, where every vertex belongs to a cycle of every length, $\Theta(n)$ chords are required. A possibly 'intermediate' variation is the following: given k, $1 \leq k \leq n$, how many chords must be added to ensure that there exist cycles of every possible length each of which passes exactly k chords? For fixed k, we establish a lower bound of $\Omega\left(n^{1/k}\right)$ on the growth rate.

Keywords: extremal graph theory, pancyclic graph, Hamilton cycle.

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