

On the size of maximally non-hamiltonian digraphs*

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In memory of Nicolas Lichiardopol.

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Abstract

A graph is called *maximally non-hamiltonian* if it is non-hamiltonian, yet for any two non-adjacent vertices there exists a hamiltonian path between them. In this paper, we naturally extend the concept to directed graphs and bound their size from below and above. Our results on the lower bound constitute our main contribution, while the upper bound can be obtained using a result of Lewin, but we give here a different proof. We describe digraphs attaining the upper bound, but whether our lower bound can be improved remains open.

Keywords: Maximally non-hamiltonian digraphs.

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O velikosti maksimalnih nehamiltonskih digrafov*

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Povzetek

Graf se imenuje *maksimalen nehamiltonski*, če je nehamiltonski, poljubni dve nesosedni vozlišči pa sta povezani s hamiltonsko potjo. V tem članku naravno razširimo ta koncept na usmerjene grafe in podamo spodnjo in zgornjo mejo njihove velikosti. Naši rezultati v zvezi s spodnjo mejo predstavljajo naš glavni prispevek, medtem ko se da zgornjo mejo dobiti z uporabo Lewinovega rezultata, vendar v tem članku podamo drugačen dokaz. Opišemo digrafe, ki dosežejo zgornjo mejo, vprašanje, ali se da našo spodnjo mejo izboljšati, pa ostaja odprto.

Ključne besede: Maksimalni nehamiltonski digrafi.

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