

Types of triangle in plane Hamiltonian triangulations and applications to domination and k -walks

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Abstract

We investigate the minimum number $t_0(G)$ of faces in a Hamiltonian triangulation G so that any Hamiltonian cycle C of G has at least $t_0(G)$ faces that do not contain an edge of C . We prove upper and lower bounds on the maximum of these numbers for all triangulations with a fixed number of facial triangles. Such triangles play an important role when Hamiltonian cycles in triangulations with 3-cuts are constructed from smaller Hamiltonian cycles of 4-connected subgraphs. We also present results linking the number of these triangles to the length of 3-walks in a class of triangulation and to the domination number.

Keywords: Graph, Hamiltonian cycle, domination, 3-walk.

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Tipi trikotnikov v ravninskih hamiltonskih triangulacijah in njihova uporaba pri dominaciji in k -sprehodih

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Povzetek

Raziskujemo število $t_0(G)$, tj. minimalno število lic v neki hamiltonski triangulaciji G , tako da ima vsak hamiltonski cikel C v G vsaj $t_0(G)$ lic, ki ne vsebujejo povezave iz C . Dokažemo zgornje in spodnje meje za maksimum teh števil za vse triangulacije s fiksnim številom trikotniških lic. Takšni trikotniki igrajo pomembno vlogo, ko v triangulacijah s 3-prerezi konstruiramo hamiltonski cikel iz manjših hamiltonskih ciklov 4-povezanih podgrafov. Predstavimo tudi rezultate, ki povezujejo število teh trikotnikov z dolžino 3-sprehodov v razredu triangulacij in z dominacijskim številom.

Ključne besede: Graf, hamiltonski cikel, dominacija, 3-sprehod.

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