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Rose Window Graphs

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Abstract

This paper introduces a family of tetravalent graphs called rose window graphs, denoted by $R_n(a,r)$, and investigates their symmetry properties. Four families of these graphs are shown to be edge-transitive and it is conjectured that every $R_n(a,r)$ which is edge-transitive belongs to one of these families. Proofs and conjectures about the size of a dart-stabilizer and about regular maps containing these graphs are also offered.

Keywords: Graph, automorphism group, symmetry, edge-transitive graph, regular map, tetravalent graph, rose window.

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Rozetni grafi

Povzetek

V članku vpeljemo družino štirivalentnih grafov, t.i. rozetnih grafov $R_n(a,r)$, in raziskujemo njihove simetrijske lastnosti. Za štiri družine od teh grafov pokažemo, da vsebujejo same povezavno-tranzitivne grafe in postavimo domnevo, da vsak povezavno-tranzitiven graf $R_n(a,r)$ pripada eni od teh družin. Podamo tudi nekaj dokazov in domnev o velikosti dart-stabilizatorja in regularnih zemljevidih, ki vsebujejo te grafe.

Ključne besede: Graf, grupa avtomorfizmov, simetrija, povezavno-tranzitiven graf, regularen zemljevid, štirivalenten graf, rozetni graf.