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Some recent discoveries about half-arc-transitive graphs

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Abstract: We present some new discoveries about graphs that are half-arc-transitive (that is, vertex- and edge-transitive but not arc-transitive). These include the recent discovery of the smallest half-arc-transitive 4-valent graph with vertex-stabiliser of order 4, and the smallest with vertex-stabiliser of order 8, two new half-arc-transitive 4-valent graphs with dihedral vertex-stabiliser D_4 (of order 8), and the first known half-arc-transitive 4-valent graph with vertex-stabiliser of order 16 that is neither abelian nor dihedral. We also use half-arc-transitive group actions to provide an answer to a recent question of Delorme about 2-arc-transitive digraphs that are not isomorphic to their reverse.

Keywords: Graph, edge-transitive, vertex-transitive, half-arc-transitive.

Nekaj novejših odkritij v zvezi s pol-ločno-tranzitivnimi grafi

Povzetek: Predstavimo nekaj novih odkritij o grafih, ki so pol-ločno-tranzitivni (t.j. so vozliščno- in povezavno-tranzitivni, niso pa ločno-tranzitivni). Mednje sodi nedavno odkritje najmanjšega pol-ločno-tranzitivnega 4-valentnega grafa z vozliščnim stabilizatorjem reda 4, in najmanjšega z vozliščnim stabilizatorjem reda 8, dva nova pol-ločno-tranzitivna 4-valentna grafa z diedrskim vozliščnim stabilizatorjem D_4 (reda 8), in prvi znani pol-ločno-tranzitivni 4-valentni graf z vozliščnim stabilizatorjem reda 16, ki ni niti abelski niti diedrski. Uporabimo tudi pol-ločno-tranzitivna grupna delovanja, da dobimo odgovor na nedavno Delormejevo vprašanje v zvezi z 2-ločno-tranzitivnimi digrafi, ki niso izomorfni svojemu reverzu.

Ključne besede: Graf, povezavno-tranzitiven, vozliščno-tranzitiven, pol-ločno-tranzitiven.