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Genus distributions of graphs under edge-amalgamations

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Abstract

We present a general method for calculating the genus distributions of those infinite families of graphs that are obtained by iteratively amalgamating copies of some base graphs along their *root-edges*. We presume that the *partitioned genus distributions* of these base graphs are known and that their *rootedges* have 2-valent endpoints. We analyze and adapt the use of *recombinant strands*, *partials*, and *productions* for deriving simultaneous recurrences for genus distributions.

Keywords: Graph, genus distribution, edge-amalgamation.

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Distribucija rodov grafov, dobljenih z amalgamacijami povezav

Povzetek

Predstavimo splošno metodo za izračun porazdelitev rodov tistih neskončnih družin grafov, ki so pridobljeni z iterativnim amalgamiranjem kopij istega osnovnega grafa vzdolž njihovih *korenskih povezav*. Predpostavljamo, da so poznane *deljene porazdelitve rodov* teh osnovnih grafov in da imajo njihove korenske povezave 2-stopenjska končna vozlišča. Analiziramo in prilagodimo uporabo različnih sredstev za izpeljavo rekurzij za porazdelitve rodov.

Ključne besede: Graf, distribucija rodov, amalgamacija povezav.