

Classification of robust cycle bases and relations to fundamental cycle bases

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Abstract

The construction of a cycle in a graph can be realized by iteratively adding cycles of a cycle basis. The construction of each elementary cycle is only possible if this cycle basis is robust. In the last years, different classes of robust cycle bases have been established. We compare these classes and show that they are completely unrelated. More precisely, we draw a Venn diagram which displays the obvious containedness relations and show that each of its regions is not empty. In addition, we continue the comparison with fundamental cycle bases.

Keywords: Minimum cycle basis, robust cycle basis, quasi-robust cycle basis, fundamental cycle basis.

Math. Subj. Class.: 05C10, 05C38, 05C50



Klasifikacija robustnih baz ciklov in povezave z bazami fundamentalnih ciklov

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Povzetek

Poljuben cikel v grafu je mogoče konstruirati z zaporednim dodajanjem ciklov iz baze. Konstrukcija vsakega elementarnega cikla je možna samo tedaj, če je ta baza ciklov robustna. V zadnjih letih so bili vpeljani različni razredi robustnih baz ciklov. Primerjamo te razrede in pokažemo, da so med seboj popolnoma nepovezani. Natančneje, narišemo Venov diagram, ki prikaže očitne relacije vsebovanosti, in pokažemo, da nobeno od njegovih območij ni prazno. Primerjamo tudi baze fundamentalnih ciklov.

Ključne besede: Minimalna baza ciklov, robustna baza ciklov, kvazi-robustna baza ciklov, baza fundamentalnih ciklov.

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