

Smart elements in combinatorial group testing problems with more defectives*

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Abstract

In combinatorial group testing problems Questioner needs to find a defective element $x \in [n]$ by testing subsets of $[n]$. In [18] the authors introduced a new model, where each element knows the answer for those queries that contain it and each element should be able to identify the defective one.

In this article we continue to investigate this kind of models with more defective elements. We also consider related models inspired by secret sharing models, where the elements should share information among them to find out the defectives. Finally the adaptive versions of the different models are also investigated.

Keywords: Combinatorial group testing, defectives, cancellative.

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Pametni elementi v problemih kombinatoričnega skupinskega testiranja z več okvarjenimi elementi*

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Povzetek

Pri problemih kombinatoričnega skupinskega testiranja s testiranjem podmnožic množice $[n]$ iščemo okvarjeni element $x \in [n]$. V [18] so avtorji vpeljali nov model, pri katerem vsak element pozna odgovor za tiste poizvedbe, ki ga vsebujejo, vsak element pa bi moral biti zmožen identificirati okvarjenega.

V tem članku nadaljujemo z raziskovanjem tovrstnih modelov, ki pa vsebujejo več okvarjenih elementov. Obravnavamo tudi sorodne modele, oblikovane po vzoru modelov deljenja skrivnosti, pri katerih si morajo elementi deliti informacije med seboj, da lahko najdejo okvarjene. Nazadnje raziskujemo tudi prilagodljive različice različnih modelov.

Ključne besede: Kombinatorično skupinsko testiranje, okvarjeni element, odpovedni.

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