REDUCTION OF MATRICES DETERMINING RESTRICTIONS FOR COUNTEREXAMPLES TO 5-FLOW CONJECTURE

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Recently was developed a method which determines graphs that cannot be subgraphs of a smallest counterexample to the 5-flow conjecture. This method is based on comparing ranks of two matrices of large size.

In this paper we improve the previous methods from Kochol and present an approach how to reduce the size of the matrix used in the process. In particular, in order to show that the smallest counterexample to the 5-flow conjecture has no circuit of length 7, we need to deal with matrix of size 819×162 in [M.Kochol: Restrictions on smallest counterexamples to the 5-flow conecture]. In this paper we reduce the size of the matrix into 317×110 to get the same result.