

On the Complexity of Finding Shortest Paths between Token Configurations on Graphs

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Abstract

Let G be a graph, and k_1, k_2, \dots, k_p positive integers. Suppose we have a collection of tokens; k_1 tokens with label 1, k_2 tokens with label 2, etc., where tokens with the same label are indistinguishable. A token configuration on G is an arrangement of those tokens on different vertices of G . We can change a token configuration by moving one token along an edge of G (to an empty vertex).

In this talk, we consider the computational complexity of the following problem: Given two token configurations, what is the minimum number of single-move steps needed to go from one configuration to the other?

Remark: This is joint work with Prof Jan van den Heuvel.