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An Example Paper

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Abstract

This is a short example to show the basics of using the ENTCS style macro files. Ample examples of how files should look may be found among the published volumes of the series at the ENTCS Home Page `http://www.elsevier.com/locate/entcs`.

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1 Introduction

2 Começou

COLORING(r, ℓ) can be easily solved in polynomial time when $(r, \ell) \in \{(0,1),(1,0),(1,1),(2,0)\}$. Therefore, in order to completely classify the complexity when $r + \ell \leq 2$ remains to analyse the $(0,2)$-case.

Lemma 2.1 COLORING$(0,2)$ *can be solved in polynomial time.*

Proof. $(0,2)$-graphs, also known as co-bipartite, is a subclass of perfect graphs [**?**], consequently its chromatic number equals to its clique number, which can be found in polinomial time using a polynomial algorithm for INDEPENDENT SET on bipartite graphs (see [**?**,**?**]). □

As $(3,0)$-graphs (tripartite graphs) have chromatic number at most three, and to verify if the chromatic number of a graph G is one or two is trivial, we know that COLORING$(3,0)$ can be solved in polynomial time. Next we consider $(4,0)$-graphs.

Lemma 2.2 COLORING$(4,0)$ *is NP-Complete.*

Proof. It is well-known that any planar graph is $(4,0)$ (4-colorable) [**?**], and X and Y provide an $O(n^2)$ algorithm to find a 4-coloring of a planar graph. In addition, to determine whether a planar graph G is 3-colorable is NP-complete [**?**] (even when a $(4,0)$-partition of G is also provided). Therefore to determine the chromatic number of $(4,0)$-graphs is NP-complete. □

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3 Bibliographical references

References