

VERTEX COLORING OF GRAPHS AND ITS COMPUTATIONAL COMPLEXITY

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Given an integer k , a k -coloring of a graph G is an assignment of colors $1, \dots, k$ to vertices of graph G in such a way that no two adjacent vertices receive the same color. The chromatic number, $\chi(G)$, of graph G is the smallest integer k such that G admits a k -coloring. Vertex coloring is the problem of determining the chromatic number of a graph; it is a well-known NP-hard problem. In fact, even determining if a graph is 3-colorable is NP-complete (also for graphs with maximum degree at most 4). In the talk we will focus on the computational complexity of the problem of 3-coloring in various classes of graphs defined by forbidding specified (induced) subgraphs.