

S-packing colorings of distance graphs

The subject of this thesis is an *S*-packing coloring of graphs. For a non-decreasing sequence $S = (s_1, s_2, \dots)$ of positive integers, a mapping which assigns colors represented by positive integers to vertices of a graph G such that vertices with color i have mutual distance greater than s_i is called an *S*-packing coloring of G . The smallest integer k for which graph G admits an *S*-packing coloring using k colors is called the *S*-packing chromatic number of G , denoted by $\chi_S(G)$.

The thesis is divided into two parts. The first part summarizes some known results on the *S*-packing colorings, while the second part is focused on own research on the *S*-packing coloring of distance graphs using sequences S whose elements are in $\{1, 2\}$. Given a set $D = \{t_1, \dots, t_k\}$ of positive integers, the distance graph $G(\mathbb{Z}, D)$ or shortly $G(D)$ is the non-oriented graph with \mathbb{Z} as the vertex set, while vertices x and y are adjacent if $|x - y| \in D$. In this thesis, we consider two classes of distance graphs $G(D)$ with sets $D = \{t_1, t_2\}$ and $D = \{t_1, t_2, t_2 + t_1\}$.