



## HOMOGENEOUS COLORING OF VERTICES

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A  $k$ -homogeneous coloring of a graph  $G$  is a proper vertex-coloring such that the number of colors in the neighborhood of every vertex is equal to  $k$ . We present some general results and then focus to homogeneous coloring of regular graphs and regular bipartite graphs. In particular, we are interested in the questions which  $d$ -regular bipartite graphs admit a  $k$ -homogeneous coloring for every  $k$ ,  $1 \leq k \leq d$ . This question is strongly related to several variations of coloring uniform hypergraphs.

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