

# Incidence coloring of graphs

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An *incidence* in  $G$  is a pair  $(v, e)$  with  $v \in V(G)$ ,  $e \in E(G)$ , such that  $v$  and  $e$  are incident. Two incidences  $(v, e)$  and  $(w, f)$  are *adjacent* if one of the following holds: (i)  $v = w$ , (ii)  $e = f$  or (iii) the edge  $vw$  equals  $e$  or  $f$ .

A  $k$ -*incidence coloring* of a graph  $G$  is a mapping  $\sigma$  of the set of incidences of  $G$  to a set  $C$  of  $k$  colors such that adjacent incidences are assigned distinct colors. The *incidence chromatic number*  $\chi_i(G)$  of  $G$  is the smallest  $k$  such that  $G$  admits a  $k$ -incidence coloring.

Incidence colorings have been introduced by Brualdi and Massey in 1993.

In this talk, we shall survey the main results and open problems concerning incidence colorings.