

# Twin Edge Colorings of Trees

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For a connected graph  $G$  of order at least 3 and an integer  $k \geq 2$ , a twin edge  $k$ -coloring of  $G$  is a proper edge coloring of  $G$  using elements of  $\mathbf{Z}_k$  so that the induced vertex coloring in which the color of a vertex  $v$  in  $G$  is the sum (in  $\mathbf{Z}_k$ ) of the colors of the edges incident with  $v$  is a proper vertex coloring. The minimum  $k$  for which  $G$  has a twin edge  $k$ -coloring is called the twin chromatic index of  $G$ . It has been conjectured that the twin chromatic index of every connected graph  $G$  of order at least 3 (except  $C_5$ ) lies between the maximum degree of  $G$  and 2 plus the maximum degree of  $G$ . In this talk, we present recent progress on this conjecture for trees as well as other new results in this area of research.