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 $\mathbb{Z}_k$ so that the induced vertex coloring in which the color of a vertex $v$ in $G$ is the sum (in $\mathbb{Z}_k$) 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.