

# Total dominator chromatic number of $k$ -subdivision of graphs

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## Abstract

Let  $G$  be a simple graph. A total dominator coloring of  $G$ , is a proper coloring of the vertices of  $G$  in which each vertex of the graph is adjacent to every vertex of some color class. The total dominator chromatic (TDC) number  $\chi_d^t(G)$  of  $G$ , is the minimum number of colors among all total dominator coloring of  $G$ . For any  $k \in \mathbb{N}$ , the  $k$ -subdivision of  $G$  is a simple graph  $G^{\frac{1}{k}}$  which is constructed by replacing each edge of  $G$  with a path of length  $k$ . In this paper, we study the total dominator chromatic number of  $k$ -subdivision of  $G$ .

*Keywords: Total dominator chromatic number,  $k$ -subdivision.*

*Math. Subj. Class.: 05C15, 05C69*

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# Totalno dominacijsko kromatsko število $k$ -subdivizij grafov

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## Povzetek

Naj bo  $G$  enostaven graf. Totalno dominacijsko barvanje grafa  $G$  je pravilno barvanje vozlišč grafa  $G$ , pri katerem je vsako vozlišče grafa sosednje vsakemu vozlišču nekega barvnega razreda. Totalno dominacijsko barvno število (TDC)  $\chi_d^t(G)$  grafa  $G$  je minimalno število barv v okviru vseh totalno dominacijskih barvanj grafa  $G$ . Za poljuben  $k \in \mathbb{N}$  je  $k$ -subdivizija grafa  $G$  enostaven graf  $G^{\frac{1}{k}}$ , ki ga konstruiramo tako, da vsako povezavo grafa  $G$  nadomestimo s potjo dolžine  $k$ . V tem članku preučujemo totalno dominacijsko kromatsko število  $k$ -subdivizije grafa  $G$ .

*Ključne besede:* Totalno dominacijsko kromatsko število,  $k$ -subdivizija.

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