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**On the adjacent vertex-distinguishing total chromatic numbers of the graphs with  $\Delta(G) = 3$ .**  
(English) [Zbl 1125.05043](#)  
J. Comb. Optim. 14, No. 1, 87-109 (2007).

Summary: Let  $G = (V(G), E(G))$  be a simple graph and  $T(G)$  be the set of vertices and edges of  $G$ . Let  $C$  be a  $k$ -color set. A (proper) total  $k$ -coloring  $f$  of  $G$  is a function  $f : T(G) \rightarrow C$  such that no adjacent or incident elements of  $T(G)$  receive the same color. For any  $u \in V(G)$ , denote  $C(u) = \{f(u)\} \cup \{f(uv) \mid uv \in E(G)\}$ . The total  $k$ -coloring  $f$  of  $G$  is called adjacent vertex-distinguishing if  $C(u) \neq C(v)$  for any edge  $uv \in E(G)$ . And the smallest number of colors is called the adjacent vertex-distinguishing total chromatic number  $\chi_{at}(G)$  of  $G$ .

In this paper, we prove that  $\chi_{at}(G) \leq 6$  for all connected graphs with maximum degree three. This is a step towards a conjecture on the adjacent vertex-distinguishing total coloring.

**MSC:**

**05C15** Coloring of graphs and hypergraphs

Cited in **1** Review  
Cited in **33** Documents

**Keywords:**

adjacent vertex-distinguishing total coloring; adjacent vertex-distinguishing total chromatic number; subdivision vertex; subdivision graph

**Full Text:** [DOI](#)

**References:**

- [1] Balister PN, Riordan OM, Schelp RH (2003) Vertex distinguishing edge colorings of graphs. J Graph Theory 42:95–109 · [Zbl 1008.05067](#) · [doi:10.1002/jgt.10076](#)
- [2] Balister PN, Bollobas B, Schelp RH (2002) Vertex distinguishing colorings of graphs with  $\{\Delta(G)\} = 2$ . Discrete Math 252:17–29 · [Zbl 1005.05019](#) · [doi:10.1016/S0012-365X\(01\)00287-4](#)
- [3] Burns AC, Schelp RH (1997) Vertex-distinguishing proper edge-coloring. J Graph Theory 21:73–82 · [Zbl 0886.05068](#)
- [4] Wang H, The adjacent vertex-distinguishing total chromatic number of Iree, accepted by Ars Combinatoria
- [5] Wang Z, Wang L, Wang J, Lu X, Zhang Z (2004) On adjacent vertex-distinguishing total coloring of  $\{\theta\}$ raph. J Lanzhou Jiaotong Univ (Nat Sci) 23(3):13–15 · [Zbl 1079.05507](#)
- [6] Zhang Z, Liu L, Wang J (2002) Adjacent strong edge coloring of graphs. Appl Math Lett 15:623–626 · [Zbl 1008.05050](#) · [doi:10.1016/S0893-9659\(02\)80015-5](#)
- [7] Zhang D, Zhang Z (2000) The adjacent vertex-distinguishing edge coloring of Iree. J Math Res Exposit 20:299–305
- [8] Zhang Z, Chen X, Li J, Yao B, Lu X, Wang J (2004) On the adjacent vertex-distinguishing total coloring of graphs. Sci China Ser A Math 34:574–583
- [9] Zhang Z, Yao B, Chen X, Wang W (2004) A note on the upper bound of adjacent vertex-distinguishing chromatic number of graphs. J Lanzhou Jiaotong Univ (Nat Sci) 23(6):143–145

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