

最大度为8不含特定子图的平面图的全染色

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Total Coloring of Planar Graph with Maximum Degree 8 and without Specified Subgraph

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摘要 全染色是对图 G 的顶点和边同时进行正常染色, 至少要用 $\Delta+1$ 个色才能对图 G 进行正常全染色. 本文运用权转移的方法, 证明了最大度为8的不含特定子图的简单平面图是9-全可染的.

关键词: [简单图](#) [平面图](#) [全染色](#) [最大度](#) [特定子图](#)

Abstract: Total-coloring of graph G is to color the vertices and the edges of the graph properly. To this end, we must use at least $\Delta+1$ colors to color the graph properly. In this paper, we use discharging method to verify that every simple planar graph with maximum degree 8 and without specified subgraph is 9-totally colorable.

Key words: [simple graph](#) [planar graph](#) [total coloring](#) [maximum degree](#) [specified subgraph](#)

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- [1] Behzad M. Graphs and their Chromatic Numbers, Doctoral Thesis, Michigan State University, 1965
- [2] Vizing V G. Some Unsolved Problems in Graph Theory. *Uspekhi Mat. Nauk*, 1968, 23: 117-134 (in Russian)
- [3] Kostochka A V. The Total Chromatic Number of any Multigraph with Maximum Degree Five is at Most Seven. *Discrete Math.*, 1996, 162: 199-214 [cross ref](#)
- [4] Sanders D P, Zhao Y. On Total 9-coloring Planar Graphs of Maximum Degree Seven. *J. Graph Theory*, 1999, 31: 67-73 3.0.CO;2-C target="_blank"> [cross ref](#)
- [5] Borodin O V. On the Total Coloring of Planar Graphs. *J. Reine Angew. Math.*, 1989, 394: 180-185
- [6] Kowalik L, Sereni J, Skrekovski R. Total-coloring of Plane Graphs with Maximum Degree Nine. *Siam J. Discrete Math.*, 2008, 22: 1462-1479 [cross ref](#)

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- [7] Shen L, Wang Y. Total Colorings of Planar Graphs with Maximum Degree at Least 8. *Sci. China Ser. A*, 2009, 52: 1733-1742 
- [8] Du D, Shen L, Wang Y. Planar Graphs with Maximum Degree 8 and without Adjacent Triangles are 9-totally-colorable. *Discrete Appl. Math.*, 2009, 157: 2778-2784 
- [9] Borodin O V, Kostochka A, Woodall D. Total Coloring of Planar Graphs with Large Maximum Degree. *J. Graph Theory*, 1997, 26: 53-59
3.0.CO;2-G target="_blank"> 
- [10] Hou J, Zhu Y, Liu G, Wu J, Lan M. Total Colorings of Planar Graphs without Small Cycles. *Graphs Combin*, 2008, 24: 91-100 
- [11] Hou J, Liu B, Liu G, Wu J. Total Coloring of Planar Graphs without 6-cycles. *Discrete Appl. Math.*, 2011, 159: 157-163 
- [12] Liu B, Hou J, Wu J, Liu G. Total Colorings and List Total Colorings of Planar Graphs without Intersecting 4-cycles. *Discrete Math.*, 2009, 309: 6035-6043 
- [1] 强会英, 李沐春, 张忠辅. 距离限制下的点可区别全色数的一个上界[J]. 应用数学学报, 2011, 34(3): 554-559.
- [2] 马刚, 马少仙, 张忠辅. 一些联图的均匀全染色[J]. 应用数学学报, 2010, 33(4): 624-631.
- [3] 闫晓霞¹⁾, 李建湘. 推广的奇轮的圆色数[J]. 应用数学学报, 2005, 28(1): 86-99.
- [4] 徐以汎. 子图识别的层分解方法[J]. 应用数学学报, 2003, 26(3): 408-412.
- [5] 刘林忠, 张忠辅, 王建方. 一些平面图의 边连结数[J]. 应用数学学报, 2001, 17(4): 443-448.
- [6] 刘林忠, 张忠辅, 王建方. 一些平面图의 边连结数[J]. 应用数学学报, 2001, 17(4): 443-448.
- [7] 王维凡, 张克民. Δ -匹配与边面全色数[J]. 应用数学学报, 1999, 22(2): 236-242.
- [8] 谢力同. 极大外平面图在边界条件下的4染色[J]. 应用数学学报, 1998, 21(1): 0-0.
- [9] 于濂, 刘彦佩. 关于3-正则子图问题的一个注记[J]. 应用数学学报, 1995, 18(2): 176-178.