

Cropper, M. M.; Goldwasser, J. L.; Hilton, A. J. W.; Hoffman, D. G.; Johnson, P. D. jun.
Extending the disjoint-representatives theorems of Hall, Halmos, and Vaughan to list-multicolorings of graphs. (English) [Zbl 0944.05040](#)
J. Graph Theory 33, No. 4, 199-219 (2000).

Philip Hall's theorem on systems of distinct representatives [J. Lond. Math. Soc. 10, 26-30 (1935; [Zbl 0010.34503](#))] and an improvement by *P. R. Halmos* and *H. E. Vaughan* [Am. J. Math. 72, 214-215 (1950; [Zbl 0034.29601](#))] can be interpreted as statements about the existence of proper list-colorings or list-multicolorings of complete graphs. The Hall-Halmos-Vaughan theorem can be stated: if G is a clique, then Hall's condition is sufficient for the existence of a proper multicoloring. The present authors study the class HHV of simple graphs G for which Hall's condition guarantees the existence of a proper multicoloring. They also show that HHV is contained in the class of graphs for which every block is a clique and each cut-vertex is in exactly two blocks. For paths, the authors address the problem of deciding if this is a proper coloring and, if so, of finding one.

Reviewer: [Arthur T. White \(Kalamazoo\)](#)

MSC:

[05C15](#) Coloring of graphs and hypergraphs

Cited in **1** Review
Cited in **4** Documents

Keywords:

[list-colorings](#); [list-multicolorings](#); [clique](#)

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- [4] and Extending Hall's theorem, Topics in combinatorics and graph theory; Essays in honour of Gerhard Ringel, Physica-Verlag, Heidelberg, pp. 360-371.
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