A renement of the Corradi-Hajnal Theorem

A. Kostochka
University of Illinois at Urbana-Champaign

Corradi-Hajnal Theorem [1] says that if $n \geq 3k$, then every n-vertex graph G with minimum degree at least 2k contains k vertex-disjoint cycles. The restriction on the minimum degree is sharp: any n-vertex graph with independence number $n - 2k + 1$ does not contain k vertex-disjoint cycles, and there are many such graphs with minimum degree $2k - 1$.

The case of $n = 3k$ is equivalent (by switching to the complement) to the statement that every n-vertex graph H with maximum degree at most $k - 1$ has an equitable k-coloring, that is, a proper coloring of vertices of H with k colors such that the sizes of color classes dier by at most 1. In 1970, Hajnal and Szemerédi [2] generailzed this result by proving the conjecture of Erdös that every graph with maximum degree at most r has an equitable r+1-coloring. In this talk, we prove a Brooks-type result describing for $r \geq n=4$ all n-vertex graphs with maximum degree at most r that do not admit an equitable r-coloring. Based on this, we describe all n-vertex graphs with minimum degree at least $2k - 1$ that do not contain k vertex-disjoint cycles. This is joint work with H. A. Kierstead and E. Yeager.

References

1. K. Corrádi and A. Hajnal, On the maximum number of independent circuits in a graph, Acta Math. Acad. Sci. Hung. 14 (1963), 423-439.

2. A. Hajnal and E. Szemeredi, Proof of a conjecture of P. Erdös, in «Combinatorial Theory and its Application» (P. Erdös, A. Rényi, and V.T. Sós, Eds.), pp. 601-623, North-Holland, London, 1970.

Численные методы интерполяции для решения некоторых задач выпуклой геометрии в пространстве Лобачевского

М.В. Куркина, Е.Д. Родионов, В.В. Славский
ЮГУ, г.Ханты-Мансийск, АлтГУ, г. Барнаул

Конформно-плоским метрикам ограниченной кривизны соответствуют выпуклые поверхности в пространстве Лобачевского [1, 2]. Наиболее важные в практическом отношении выпуклые множества – выпуклые многогранники. В работе изучаются соответствующие кон-