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Henry A. Kierstead, Alexandr V. Kostochka and Andrew McConvey*

(mconve2@illinois.edu), Dept. of Mathematics, 250 Altgeld Hall, 1409 W. Green St., Urbana, IL 61801. *Strengthening theorems of Dirac and Erdős on disjoint cycles*. Preliminary report.

For an integer $k \geq 2$ and a graph G , let $H_k(G)$ be the set of vertices with degree at least $2k$ and $L_k(G)$ be the set of vertices of degree at most $2k - 2$. In 1963, Dirac and Erdős proved that G contains k disjoint cycles whenever $|H_k(G)| - |L_k(G)| \geq k^2 + 2k - 4$. We improve this result, proving that a difference of at least $3k$ guarantees the existence of k disjoint cycles and, for small graphs, that this bound is the best possible. We also prove that when the order of G is large, a difference of at least $2k$ is sufficient for k disjoint cycles and is the best possible bound. (Received September 11, 2016)