1047-05-314 **Maria Chudnovsky** and **Paul Seymour*** (pds@math.princeton.edu), Math Dept, Princeton University, Fine Hall, Washington Rd, Princeton, NJ 08540. *Packing seagulls.*

Let G be a graph with $\alpha(G) < 3$ ($\alpha(G)$ denotes the size of the largest stable set in G). If G has n vertices, then its chromatic number is at least $\lceil n/2 \rceil$, and so Hadwiger's conjecture implies that there should be $\lceil n/2 \rceil$ disjoint connected subgraphs in G, pairwise joined by edges. This is far from being proved.

If G also contains a clique of cardinality at least $n/3$, then the disjoint subgraphs exist; this is a consequence of our main result and generalizes two earlier theorems of Blasiak. Our main result answers when a graph G with $\alpha(G) < 3$ contains k vertex-disjoint seagulls (a *seagull* is an induced three-vertex path). We give five necessary conditions, and the union of these five conditions is sufficient. We also answer the analogous question for fractional packing of seagulls, and give a polynomial-time algorithm to test whether there are k disjoint seagulls.

This all depends on the hypothesis that $\alpha(G) < 3$; for general graphs a result of Dor and Tarsi implies that testing whether there are k disjoint seagulls is NP-complete. (Received February 01, 2009)