

1014-05-1031      **Steven W. Sivek\*** (ssivek@mit.edu), 282 Massachusetts Ave. #414, Cambridge, MA 02139.

*Some plethysm results related to Foulkes's conjecture.*

We provide several classes of examples to show that Stanley's plethysm conjecture and a reformulation by Pylyavskyy, both concerning the ranks of certain matrices  $K_\lambda$  associated with Young diagrams  $\lambda$ , are in general false. We also provide bounds on the rank of  $K_\lambda$  by which it may be possible to show that the approach of Black and List to Foulkes's conjecture does not work in general. Finally, since Black and List's work concerns  $K_\lambda$  for rectangular shapes  $\lambda$ , we suggest a constructive way to prove that  $K_\lambda$  does not have full rank when  $\lambda$  is a large rectangle. (Received September 26, 2005)