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CHROMATIC SYMMETRIC FUNCTIONS AND CHANGE OF BASIS

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For a graph G, let $X(G)$ be Stanley's chromatic symmetric function. We show that if e_λ appears with nonzero coefficient in the elementary symmetric function expansion for $X(G)$, then the shape of λ gives bounds on the independence number and clique number of G. This is done by first considering the expansion of $X(G)$ in terms of monomial symmetric functions and then doing a basis change. This permits us to make progress on the (3+1)-free Conjecture of Stanley and Stembridge as well as give simple proofs of previous results.

This is joint work with Foster Tom.