1067-Z1-657   **Corey M Manack*** (`cmanack@indiana.edu`), 225 W Reeder St., Dillon, MT 59725. *Character Estimates, and Random Walks on $SU(n)$.*

We say a compact Lie group G is *simple* if it is connected, has finite center and is a simple group modulo its center. We study the relationship between character estimates and the structure of conjugacy classes within G. Suppose G is simple and centerless; the first result shows, for n sufficiently large, the set of n-fold products from a nontrivial conjugacy class contains the identity as an interior point. This n can be chosen uniformly over the set of nontrivial conjugacy classes of G. We use this result to prove a uniform estimate on the set of normalized character values of G. In an opposite direction, we prove a different type of character estimate, which is used to bound the rate of convergence to Haar measure, for certain conjugation-invariant random walks on $SU(n)$. This convergence is with respect to the total variation distance of Diaconis and Shashahani. (Received September 13, 2010)

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