1089-20-179 **Jason Fulman** (fulman@usc.edu), Department of Mathematics, University of Southern California, Los Angeles, CA 90089, and **C. Ryan Vinroot*** (vinroot@math.wm.edu), Department of Mathematics, College of William and Mary, P. O. Box 8795, Williamsburg, VA 23187.
*Generating functions for real character degree sums of finite general linear and unitary groups.*

It is known that if $\chi$ is any real-valued irreducible complex character of $GL(n,q)$, then $\chi$ is the character of a real representation, that is, the Frobenius-Schur indicator of $\chi$ is 1. It follows that the sum of the degrees of these real-valued characters of $GL(n,q)$ is equal to the number of elements in the group which square to the identity, which we can count. On the other hand, we may use symmetric functions to obtain a generating function for the degree sum for real-valued characters. In the case that $q$ is even, we use $q$-series identities to obtain a new proof that all real-valued characters of $GL(n,q)$ have indicator 1. When $q$ is odd, we instead apply this known result to obtain what seems to be a new $q$-series identity.

In the case of the finite unitary group $U(n,q)$, the Frobenius-Schur indicators of its characters in general are unknown. We compute a generating function for the sum of the real character degrees for this group, again using symmetric function theory, and also by applying the results for $GL(n,q)$ and a change of variables $q \mapsto -q$. In the end, we obtain a generating function for the sum of the degrees of real-valued characters of $U(n,q)$ which have indicator 1, and one for the sum of those with indicator $-1$. (Received February 13, 2013)