

Meeting: 1004, Bowling Green, Kentucky, MONTGOMERY, Invited Address

1004-16-1 **M. Susan Montgomery***, University of Southern California. *On some connections between finite groups and Hopf algebras.*

Let H be a finite-dimensional semi-simple Hopf algebra. In this talk we consider analogs between the structure of H and that of the group algebra of a finite group G . We first review some older results (such as the analogs of Lagrange's theorem and of basic character theory) and then go to newer ones. In particular we consider the Frobenius-Schur indicator of an irreducible H -module, which extends the classical notion in group representations. This invariant (and its generalizations) is one of the few invariants known for Hopf algebras and may therefore be quite useful; it has already been used in the classification theory and in questions on representation theory.

In some cases it is possible to compute the indicator explicitly. Let $H = D(G)$, the Drinfel'd double of the group algebra of G . In joint work with Kashina and Mason, we showed that if G is the symmetric group S_n , then the indicator of every irreducible $D(G)$ -module V is $+1$; in particular they are all self-dual. More recently, with R. Guralnick, we extend this fact to $D(G)$ for any finite real reflection group G . These results generalize the classical result for G itself. (Received January 28, 2005)