1035-16-1339 **Andrea Jedwab** and **Susan Montgomery*** (smontgom@math.usc.edu), Department of Mathematics, KAP 108, USC, 3620 S. Vermont Ave, Los Angeles, CA 90089. *Representations of some Hopf algebras associated to the symmetric groups.*

We study the representations of two bismash product Hopf algebras constructed from the standard representation of S_n as a factorizable group, that is $S_n = S_{n-1}C_n = C_nS_{n-1}$, where $C_n = \langle(1, 2, 3, \ldots, n)\rangle$, over $k = \mathbb{C}$. More specifically, the two Hopf algebras are $H_n = k^{C_n}\#kS_{n-1}$ and its dual $J_n = k^{S_{n-1}}\#kC_n = (H_n)^*$. The simple modules for both algebras can be described explicitly. We prove that for H_n, the Frobenius-Schur indicators of all simple modules are +1, that is, the algebra is *totally orthogonal*. This fact was known classically for S_n itself, as well as for any finite real reflection group G.

However, for the dual Hopf algebra $J_n = k^{S_{n_1}}\#kC_n$, the indicator can have value 0 as well as 1. When $n = p$, a prime, we obtain a precise result as to which representations have indicator +1 and which ones have 0; in fact as $p \to \infty$, the proportion of simple modules with indicator 1 becomes arbitrarily small.

To prove this, we first prove a result about Frobenius-Schur indicators for more general bismash products $H = k^G\#kF$, coming from any factorizable group of the form $L = FG$ such that $F \cong C_p$. (Received September 19, 2007)