Meeting: 1004, Bowling Green, Kentucky, SS 10A, Special Session on Hopf Algebras and Related Topics

1004-16-207 **Marcelo Aguiar*** (maguiar@math.tamu.edu), Texas A&M University, Department of Mathematics, College Station, TX 77843-3368, and **Sam Hsiao**. *Factorization of characters on graded connected Hopf algebras.*

Let H be a graded connected Hopf algebra over a field k of characteristic 0 and q a primitive n-th root of unity. We show that every character $\varphi : H \to k$ decomposes uniquely as a product of n characters

$$\varphi = \varphi_0 \varphi_1 \cdots \varphi_{n-1}$$

such that

$$\varphi_i^{q^i}(h) = q^{\deg(h)} \varphi_i(h)\,,$$

for every homogeneous $h \in H$, $i = 0, \ldots, n-1$. The special case $n = 2$ is the even-odd factorization appearing in previous work of the first author, Bergeron, and Sottile (math.CO/0310016). We obtain explicit formulas for the factors φ_i when φ is the universal character on the Hopf algebra of quasi-symmetric functions, extending previous results of the authors (math.CO/0408053). (Received January 24, 2005)