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

1004-16-52 **Leonid Krop*** (lkrop@condor.depaul.edu), Department of Mathematical Science, DePaul University, 2320 N. Kenmore, Chicago, IL 60614, and **David E Radford**. *Rank 1 Hopf Algebras and Their Doubles.*

Some of the most important Hopf algebras have the property that they are generated as algebras by the second term of the coradical filtration. For such an H, assuming H_0 is a subalgebra, we introduce a measure of complexity, the *rank* of H, as the number of free generators of the H_0- module H_1/H_0.

Let G be a finite abelian group, and $\Bbbk$ a field of characteristic 0 containing a $|G|$-th primitive root of unity. Pick an element $a \in G$ and a character χ of G. We attach a finite-dimensional Hopf algebra $H = H_{G,\chi,a)}$ to the above data. We let $D = D_{G\chi,a)}$ denote the Drinfel'd double of $H_{G,\chi,a)}$.

In the talk we present the following results. Put $H = H_{G,\chi,a)}$, $D = D_{G,\chi,a)}$, $n = \mathrm{ord}(\chi(\mathrm{a}))$. (1) Every finite-dimensional indecomposable H- module is uniserial and there are $|G|n$ of them; (2) H is quasitriangular iff $H \simeq A \otimes H_4$ with A the group algebra of a finite abelian group and H_4 the Sweedler's 4- dimensional algebra; (3) For every i, $1 \leq i \leq n$ there are simple D- modules of dimension i. For every $i < n$ the number of nonisomorphic simples is the same and equals to $|K|$ for a subgroup K of $\widehat{G} \times G$.

The talk is a part of joint work with D. Radford. (Received January 12, 2005)