

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

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**Robert G. Underwood\*** (runderwo@mail.aum.edu), Department of Mathematics, Auburn University, Montgomery, P.O. Box 244023, Montgomery, AL 36124-4023. *Parameters for Hopf Orders*. Preliminary report.

Let  $K$  be a finite extension of the  $p$ -adic rationals  $\mathbb{Q}_p$  with ring of integers  $R$ , let  $C_{p^n}$  denote the cyclic group of order  $p^n$ ,  $n \geq 1$ , and let  $H$  be a Hopf algebra order in the group algebra  $KC_{p^n}$ . L. Childs has conjectured that Hopf orders in  $KC_{p^n}$  can be classified using  $n(n+1)/2$  parameters consisting of  $n$  valuation parameters and  $n(n-1)/2$  unit parameters. This conjecture is known to be true for the case  $n = 1$  (J. Tate and F. Oort) and for the case  $n = 2$  (C. Greither, N. Byott, L. Childs, and R. Underwood.) For  $n = 3$  many interesting Hopf orders in  $KC_{p^3}$  can be constructed using six parameters—three valuation parameters and three unit parameters—though it is not known whether six parameters completely determine all of the Hopf orders.

In this paper we discuss Childs' conjecture and focus on the open case when  $n = 3$ . (Received January 15, 2005)