Alan Koch* (akoch@agnesscott.edu), Department of Mathematics, Agnes Scott College, 141 E. College Ave., Decatur, GA 30030. Calculation of Hopf Orders via Breuil Modules. Preliminary report.

Let $R$ be a discrete valuation ring with quotient field $K$ and residue field characteristic $p$, and let $A$ be a finite abelian $K$-Hopf algebra. We will show how Breuil modules, an analogue of finite Honda systems when $R$ is a ramified extension of $W(k)$, can be used to compute $R$-Hopf orders inside $A$, focusing mainly on the case where $\text{Spec}(A)$ is killed by $p$. When $A$ is a rank $p$ Hopf algebra we will explicitly describe the Breuil modules that give the Hopf orders and determine the maximal Hopf order in $A$. (Received February 15, 2006)