Lindsay N. Childs* (childs@math.albany.edu), Department of Mathematics, University at Albany, Albany, NY 12222. Counting Hopf Galois structures on Galois extensions of fields.

If $L/K$ is a Galois extension of fields with Galois group $\Gamma$, then the Hopf Galois structures on $L/K$ by a $K$-Hopf algebra $H$ with associated group $G$ correspond bijectively to the set $E(\Gamma, G)$ of equivalence classes of regular embeddings of $\Gamma$ into $Hol(G)$, the holomorph of $G$ in $Perm(G)$. We discuss some recent results related to determining those equivalence classes. In particular, we find lower bounds for the cardinality of $E(\Gamma, G)$ when $\Gamma$ is isomorphic to the group of principal units of $F_p[x]/(x^{m+1})$ and $G$ is an elementary abelian $p$ group of order $p^m$ ($p$ an odd prime), relating to work of Featherstonhaugh, and when $G = \Gamma$ is a semidirect product of finite cyclic groups. This last work is joint with Jesse Corradino. (Received February 02, 2006)