Meeting: 1006, Lubbock, Texas, SS 3A, Special Session on Classical and Differential Galois Theory

1006-12-141 **John L. Hammond*** (jhammond@math.utexas.edu). *Regular realizations of p-groups.* Preliminary report.

Let p be an odd prime and let k denote the p-th cyclotomic field. We are interested in the regular realization of p-groups over k. By a regular realization of G (over k) we mean a G-Galois extension of fields L/K, such that k is algebraically closed in L and K is a purely transcendental extension of k. It is known that if G possesses a regular realization then so does every quotient of G, as does every split extension with quotient G and abelian kernel—yielding regular realizations for a large class of groups. We consider the p-groups which do not lie in this class, the smallest of which have order p^5. These groups are cyclic central extensions of groups which are known to have regular realizations. We give an example in which we construct the smaller extension, analyze the associated embedding problem and describe its obstruction in the Brauer group. (Received February 11, 2005)