1046-13-22 **Aaron B Adcock*** (`Aaron.Adcock@ttu.edu`), Dept of Math and Stats, Mail Stop 1042, Texas Tech University, Lubbock, TX 79409. *Vector Invariants of Elementary Abelian p-Groups.* Preliminary report.

Let $\rho : G \hookrightarrow GL(n, F)$ be a faithful representation of a finite group G over a field F. It induces an action of the group on the vector space $V = F^n$, thus on the dual space, and hence on the symmetric algebra on the dual, denoted by $F[V]$. The subring of invariant polynomials is denoted by $F[V]^G$. If $n = 2$ and F a finite field of characteristic p and order $q = p^s$, then a p-Sylow subgroup G of $GL(2, F)$ consists of all upper triangular matrices with 1's on the diagonal. This is then an elementary abelian p-group of rank s. Its invariants form a polynomial ring. We are interested in the n-fold vector invariants of this representation. As n increases these rings become more and more complicated, e.g., if $n \geq 3$ then the invariants are no longer Cohen-Macaulay. Nevertheless, we are able to present a complete generating set of these invariants. Furthermore, we expect that we can generalize our results to vector invariants of arbitrary p-groups. This work is done under the supervision of Prof. Dr. Mara D. Neusel and supported by the Barry M. Goldwater Foundation. (Received June 03, 2008)