1014-11-527 **Chuang Peng*** (cpeng@morehouse.edu), Department of Mathematics, Morehouse College, Atlanta, GA 30314. *Additive Theorems and Davenport Constant over Finite Groups.*

One of the wide open questions in additive theory and commutative algebra is to find the min n such that a sequence of size n contains a zero sum. It is well known as Davenport constant. There have been several variations of Davenport constant being studied extensively, one of which is on the min size containing additive bases of group G, denoted as $r(G)$. It was conjectured in 1979 that $r(Z_p \oplus Z_p) = 2p - 1$ and proved by the author in 1987. Further he proved that $r(\oplus^m Z_p) = p^{m-1} + p - 2$ for $m \geq 3$. An important special case arises if subsets are considered. The min integer which guarantees the zero sum is denoted as $C(G)$, the min integer which guarantees an additive basis is denoted as $c(G)$. It was conjectured in 1975 that for a group of order ph, p the smallest prime dividing $|G|$, $c(G) = p + h - 2$, and proved by the author for all elementary groups of rank ≥ 2, and proved for all finite Abelian groups in 2003 by Gao et al. This paper includes the results on Abelian p groups. It starts with some preliminary introduction on group algebra structure and properties of the product $\Pi(S)$. It proves that $r(Z_{p^{m-1}} \oplus Z_p) = p^{m-1} + p - 1$. Moreover, it proves that $r(G) = \max\{p^{m-1} + p - 2, D(G)\}$ for any abelian p-group G of order p^m. (Received September 19, 2005)