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Xiaoyu Liu* (xiaoyu.liu@wright.edu), 3640 Colonel Glenn HWY, Dayton, OH 45435. *A Ward type bound on divisible codes over finite abelian groups.*

Divisible codes were first introduced by Ward as linear codes over finite fields whose codewords all have weights divisible by a non-trivial common divisor. The concept of divisibility can be naturally generalized to codes over any algebraic alphabets. In his earlier work, Ward proved an upper bound on dimension of linear divisible codes over finite fields in terms of the weight spectrum of the code. The bound was a starting point to prove the Gleason-Pierce-Ward theorem for linear codes over finite fields. In this paper, we prove an analogous upper bound on dimension of additive divisible codes over finite abelian groups, using the fact that Ward's bound is equivalent to a set of congruences having integer solutions. This bound, as expected, helps to generalize the Gleason-Pierce-Ward theorem for linear or additive codes over various algebraic alphabets other than finite fields. (Received January 25, 2010)