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Xiaoyu He*, 282 Eliot Mail Center, Cambridge, MA 02138-7524. *Cross Number Invariants of Finite Abelian Groups.*

The cross number of a sequence over a finite abelian group G is the sum of the inverse orders of the terms of that sequence. We study two group invariants, the maximal cross number of a zero-sum free sequence over G , called $k(G)$, introduced by Krause, and the maximal cross number of a unique factorization sequence over G , called $K_1(G)$, introduced by Gao and Wang. Conjectured formulae for $k(G)$ and $K_1(G)$ are known, but only some special cases are proved for either. We show structural results about maximal cross number sequences that allow us to prove an inductive theorem giving conditions under which the conjectured values of k and K_1 must be correct for $G \oplus C_{p^\alpha}$ if they are correct for a group G . As a corollary of this result we prove the conjectured values of $k(G)$ and $K_1(G)$ for cyclic groups C_n , given that the prime factors of n are far apart. (Received September 10, 2013)