1106-20-2613 **Alexander F. Card***, WCM 222, University of Central Missouri, Warrensburg, MO 64093.
Monotone Catenary Degrees for Small Groups. Preliminary report.

Let G be a finite abelian group. The block monoid of G is the set $\mathcal{B}(G)$ of zero-sum sequences $g_1 \cdots g_n$ such that $\sum_{i=1}^{n} g_i = 0$ with the operation given by concatenation. A factorization $z = \alpha_1 \cdot \ldots \cdot \alpha_n$ of length $|z| = n$ of an element $\alpha \in \mathcal{B}(G)$ is a product of n atoms of $\mathcal{B}(G)$; that is, zero-sum sequences which contain no proper zero-sum subsequences. The monotone catenary degree $\mathsf{c}_{\text{mon}}(G)$ is the smallest $m \in \mathbb{N}_0 \cup \{\infty\}$ such that for each $\alpha \in \mathcal{B}(G)$ and every pair of factorizations z, z' of α where $|z| \leq |z'|$, there is a chain $z = z_0, z_1, \ldots, z_k = z'$ of factorizations of α with $|z_i| \leq |z_{i+1}|\ \forall i$ where z_{i+1} is constructed from z_i by replacing at most m atoms from z_i with at most m new atoms. In a recent paper Geroldinger and Yuan provide explicit upper and lower bounds for $\mathsf{c}_{\text{mon}}(G)$. They leave open exact values for cyclic groups and the following groups:

$$C_2^3, C_2^4, C_3^2, C_3^3, C_3^4, C_3^5, C_2 \oplus C_4, C_2 \oplus C_6.$$

We investigate, using theoretical and computational techniques $\mathsf{c}_{\text{mon}}(G)$ where G is one of these exceptional groups. (Received September 16, 2014)