1048-13-233      **Terri Moore\*** (`mooret@seattleu.edu`). *Syzygy Sequences and Divisor Sequences for Finitely Generated Krull Monoids.*

Let $H$ be a finitely generated Krull monoid. The irreducible elements of $H$ may satisfy some nontrivial relations. To better understand these relations we define two sequences. The *syzygy sequence* is a sequence of monoids, starting with $H$, where each subsequent monoid is defined by the relations on the irreducible elements of the previous monoid. The *divisor sequence* is a sequence of natural numbers associated to each element of $H$ where the $i$th term is the number of irreducible elements dividing the $i$th power of the element.

We show that the syzygy sequence is periodic of period 2 and use this in the study of the divisor sequences. We show that sequences with certain properties are not the divisor sequence for any irreducible element of a Krull monoid whereas sequences with other properties can always be realized as the divisor sequence of an irreducible element in some Krull monoid. (Received February 09, 2009)