1086-11-2130 **Madeline Handschy** and **Katherine Meyer***, Box 8983, Smith College, Northampton, MA 01063, and **Katherine Phillips** and **Jennifer Sadler**. *Monoids Determined by a Linear Homogeneous Diophantine Equation.* Preliminary report.

Given nonzero integers $a_1, a_2, \ldots, a_n$, we may consider the linear homogeneneous Diophantine equation

$$a_1x_1 + a_2x_2 + \ldots + a_nx_n = 0.$$

The set of n-tuples $(x_1, x_2, \ldots, x_n)$ which are solutions to this Diophantine equation form an abelian group under coordinate-wise addition. However, for many applications in algebra, one is only concerned with nonnegative solutions to the Diophantine equation. These nonnegative solutions form a monoid

$$M = M(a_1, a_2, \ldots, a_n) = \{(x_1, \ldots, x_n) \in \mathbb{N}_0^n \mid a_1x_1 + a_2x_2 + \ldots + a_nx_n = 0\}.$$

Elements of these monoids may be factored into a sum of irreducible elements, i.e. elements of the monoid which cannot be written as a sum of two nonzero elements of the monoid. As with algebraic number rings, factorizations are not usually unique. Since these monoids are Krull, they have a divisor class group which controls the factorization. In our research, we expand upon earlier work of Chapman, Krause, and Oeljeklaus, which clarifies the relationship between the class group and the coefficients of certain Diophantine equations. We address this relationship more broadly, by relating the coefficients to factorization properties such as the elasticity. (Received September 24, 2012)