1086-13-2532 **Gwyneth R Whieldon*** (whieldon@hood.edu), 401 Rosemont Avenue, Frederick, MD 21701.

Betti Numbers of Infinite Free Resolutions. Preliminary report.

Let R be a polynomial ring over a characteristic zero field $\Bbbk$ in n indeterminents and I be an ideal. Examining the properties of the infinite graded resolution of the residue field over $S = R/I$ is difficult, even in the special cases where I is a complete intersection, toric ideal, or monomial ideal. In particular, providing explicit formulas for either the Betti numbers or the Poincare series of such resolutions can be difficult.

For certain classes of monomial ideals however, the Betti numbers of the resolution satisfy very nice recursion formulas. For example, the Betti numbers of the resolution of $\Bbbk$ over $S = \Bbbk[x, y]/(x^2, xy)$ are given by $\beta_i(S) = F_i$, where F_i is the ith Fibonacci number. Using results of Jollenbeck and Welker, we construct classes of ideals with given recursion formulas, and give a method to construct, for classes of linear recursion formulas $r_i = \alpha_{i-1}r_{i-1} + \cdots + \alpha_j r_j$, a monomial ideal $\mathfrak{a} \subset \Bbbk[x_1, ..., x_n]$ with Betti numbers $\beta_i(\Bbbk[x_1, .., x_n]/\mathfrak{a}) = r_i$. (Received September 25, 2012)