1041-13-258 **Amanda I Beecher*** (amanda.beecher@usma.edu), P O Box 57, West Point, NY 10996. *Free modules of a multigraded resolution.*

Let $R = \Bbbk[x_1, \ldots, x_m]$ be the polynomial ring over a field $\Bbbk$ in m variables with the standard $\mathbb{Z}^m$ grading and suppose L is a finite $\mathbb{Z}^m$ (multigraded) R-module. In 2007, Tchernev constructs a free resolution of L using the linear algebra of a minimal free presentation of L. While this free resolution is canonical, the structure of the free modules are not transparent. The original construction creates a so-called lattice of T-flats. We use this lattice to give an explicit formula for the dimension of the free modules. Moreover, we also describe a canonical basis for the free modules from this lattice. (Received August 12, 2008)