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**Justin W. DeVries\*** (s-jdevrie3@math.unl.edu), 203 Avery Hall, Department of Mathematics, University of Nebraska, Lincoln, NE 68588-0130. *A Bound on the Betti Number of Multi-graded Differential Modules.*

This talk concerns differential modules (i.e. modules with a square-zero endomorphism) over a polynomial ring  $k[x_1, \dots, x_d]$ , with  $k$  a field. We introduce a notion of a Betti number of a differential module, and establish lower bounds when the differential module is multi-graded with finite length homology. This also gives a lower bound for the total rank of a multi-graded complex of free modules with finite length homology. (Received January 25, 2010)