1107-13-200 **Luchezar L Avramov*** (avramov@math.unl.edu), Department of Mathematics, University of Nebraska-Lincoln, Lincoln, NE 68588, **Alexandra Seceleanu**, Department of Mathematics, University of Nebraska-Lincoln, Lincoln, NE 68588, and **Zheng Yang** (s-zyang8@math.unl.edu), Department of Mathematics, University of Nebraska-Lincoln, Lincoln, NE 68588. *Polynomial growth of Betti sequences over local rings.* Preliminary report.

The asymptotic patterns of the Betti sequences of the finitely generated modules over a local ring R reflect and affect the singularity of R. For instance, these sequences are eventually zero if and only if R is regular (Auslander and Buchsbaum, Serre) and they are eventually constant if and only if R is a hypersurface (Shamash, Gulliksen, Eisenbud). We describe those rings over which the next simplest pattern occurs—each Betti sequences is eventually arithmetic. More generally, when c is a non-negative integer we obtain sufficient conditions and necessary conditions for each Betti sequences to be eventually given by some polynomial of degree less than c. These conditions coincide when $c \leq 3$ or when R is homogeneous. (Received January 14, 2015)