

1053-13-344

**Hamid Rahmati\*** ([hamid.rahmati@ttu.edu](mailto:hamid.rahmati@ttu.edu)) and **Janet Striuli**. *Artinian Gorenstein Rings and Infinite Syzygies*. Preliminary report.

Let  $R$  be a commutative local ring and  $M$  be an  $R$ -module. We say that  $M$  is an infinite syzygy if there is an exact sequence

$$0 \rightarrow M \rightarrow F_1 \rightarrow F_2 \rightarrow \cdots \rightarrow F_{n-1} \rightarrow F_n \rightarrow \cdots$$

where  $F_i$  is free for all  $i \geq 1$ . The ring  $R$  is artinian Gorenstein if and only if every finitely generated module is an infinite syzygy. We show that if the embedding dimension of  $R$  is small, one only needs to verify that the residue field is an infinite syzygy. (Received September 08, 2009)