1138-13-115 **Adela Vraciu*** (`vraciu@math.sc.edu`). *Totally acyclic complexes over tensor products of algebras.* Preliminary report.

A doubly infinite complex of free modules over a Noetherian local ring is called totally acyclic if it is acyclic and its dual is also acyclic. A syzyzgy in such a complex is called a totally reflexive module. A ring is called G-regular if the only totally reflexive modules are free.

Let R, S be local Artinian algebras of finite type over a field k and let $T = R \otimes_k S$. We investigate the following questions:

1. If $\mathcal{F}$ is a totally acyclic complex over T, does it follow that $\overline{\mathcal{F}} = \mathcal{F} \otimes_T (k \otimes_k S)$ is a totally acyclic complex over S?
2. If R and S are G-regular, does it follow that T is G-regular?

We prove that these questions have an affirmative answer if R belongs to a special class of G-regular rings which we call strictly G-regular.

An example of a strictly G-regular ring is $R = k[y_1, \dots, y_n]/(y_1, \dots, y_n)^2$, and as a consequence of our result we recover Tracy-Rangel's description of all the totally reflexive modules over the ring

$$\frac{k[x, y_1, \dots, y_n]}{(x^2, (y_1, \dots, y_n)^2)} = \frac{k[x]}{(x^2)} \otimes_k \frac{k[y_1, \dots, y_n]}{(y_1, \dots, y_n)^2}$$

(Received February 05, 2018)