Annals of the University of Bucharest (mathematical series)
(Analele Universităţii Bucureşti. Matematică)
1 (LIX) (2010), 295

Corrigendum to "Lefschetz property of complete intersections"

Mircea Cimpoeaş

Due to a regrettable error, the first page of the paper **Lefschetz property of complete intersections**, An. Univ. Bucureşti, Mat., **LVIII** (2009), 125-144, was wrongly printed. One should read this page as follows:

Abstract - We compute the generic initial ideal of a complete intersection ideal in three variables, generated by a regular sequence of polynomials, with respect to the reverse lexicographic order. We also compute the generic initial ideal for some particular cases of complete intersections in more variables.

Key words and phrases : complete intersection, generic initial ideal, Lefschetz property.

Mathematics Subject Classification (2000) **:** Primary: 13P10; Secondary: 13D40, 13C40.

1. Introduction

Let $S = K[x_1, x_2, x_3]$ be the polynomial ring over a field K of characteristic zero. Let $f_1,\ f_2,\ f_3$ be a regular sequence of homogeneous polynomials of degrees d_1, d_2 and d_3 respectively. We consider the ideal $I = (f_1, f_2, f_3) \subset S$. Obviously, S/I is a complete intersection Artinian K-algebra. One can easily check that the Hilbert series of S/I depends only on the numbers d_1, d_2 and d_3. More precisely,

$$H(S/I,t) = (1 + t + \cdots + t^{d_1 - 1})(1 + t + \cdots + t^{d_2 - 1})(1 + t + \cdots + t^{d_3 - 1}).$$

[17, Lemma 2.9] gives an explicit form of $H(S/I, t)$.

We say that a homogeneous polynomial f of degree d is *semiregular* for S/I if the maps $(S/I)_t \xrightarrow{\cdot f} (S/I)_{t+d}$ are either injective, either surjective for all $t \geq 0$. We say that S/I has the *weak Lefschetz property* (WLP) if there exists a linear form $\ell \in S$, semiregular on S/I, in which case we say that ℓ is a weak Lefschetz element for S/I. A theorem of Harima-Migliore-Nagel-Watanabe (see [10]) states that S/I has (WLP). We say that S/I has the *strong Lefschetz property* (SLP) if there exists a linear form $\ell \in S$ such that ℓ^b is semiregular on S/I for all integer $b \geq 1$. In this case, we say that ℓ is a strong Lefschetz element for S/I. Of course, $(SLP) \Rightarrow (WLP)$ but the converse is not true in general. It is not known if S/I has (SLP) for any regular sequence of homogeneous polynomials $f_1,\ f_2,\ f_3$. This is known