Harima, Tadahito; **Watanabe, Junzo**
The strong Lefschetz property for Artinian algebras with non-standard grading. (English)
Zbl 1133.13021
J. Algebra 311, No. 2, 511-537 (2007).

The paper under review deals with finite-dimensional (commutative) algebras over fields of characteristic 0. Such an algebra has the strong Lefschetz property if it contains a linear element such that multiplication by each suitable power of that element induces a bijection between the homogeneous components which are equal number of degrees away from the lowest and, respectively, highest degrees of the algebra. This property so far has been investigated under the assumption that the generators are all of degree 1, the case which is usually referred to as the standard grading.

In the paper under review the authors establish a variety of results about the strong Lefschetz property for non-standard gradings. An interesting aspect of their approach is the use of the strong Lefschetz property for modules rather than algebras. Moreover it turns out that the results establish in the non-standard case can be used to prove the strong Lefschetz property for algebras with standard grading.

Reviewer: Alex Martsinkovsky (Boston)

MSC:

13E10	Commutative Artinian rings and modules, finite-dimensional algebras
13D40	Hilbert-Samuel and Hilbert-Kunz functions; Poincaré series

Cited in **3** Reviews
Cited in **13** Documents

Keywords:

strong Lefschetz property; Hilbert function; Artinian algebra; nilpotent matrix; Gorenstein algebra

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