

The weak Lefschetz property for Artinian Gorenstein algebras

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It is an extremely elusive problem to determine which standard artinian Gorenstein graded K -algebras satisfy the weak Lefschetz property (WLP). Codimension 2 artinian Gorenstein graded K -algebras have the WLP and it is open to what extent such result might work for codimension 3 artinian Gorenstein graded K -algebras.

In this talk I will summarize what we know about this problem and, in particular, I will show that all artinian Gorenstein K -algebras of codimension 3 with arbitrary socle degree d , arbitrary Sperner number α and at least three peaks (i.e., three values of the h-vector reaching the Sperner number) do satisfy the WLP.