The weak Lefschetz property for Artinian Gorenstein algebras

ROSA MARIA MIRÓ-ROIG, Universitat de Barcelona

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.