DEGREES OF IRREDUCIBLE MORPHISMS

The concept of degree of an irreducible morphism was introduced by S. Liu, in 1992. This notion has shown to be a very useful tool to solve many problems. In particular, we are able to determine if a finite dimensional algebra over an algebraically closed field is of finite representation type by computing the degree of a finite number of irreducible morphisms.

It is well known that A is an artin algebra of finite representation type if and only if there exists a positive integer n such that $\Re^n(X,Y)=0$ for all A-module X,Y. In this case, by the Harada and Sai Lemma we can consider $n=2^m-1$ where m is the maximum length of all the indecomposable A-modules. In this talk, for a finite dimensional algebra over an algebraically closed field of finite representation type A, we are going to show a new bound n such that $\Re^n \neq 0$ but $\Re^{n+1}(X,Y)=0$ for all $X,Y \in \text{mod}A$. This bound is given in terms of degrees of irreducible morphisms.

We are also going to present some recent developments on degrees of irreducible morphisms.

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