τ-TILTING MODULES OVER BRAUER TREE ALGEBRAS

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(JOINT WORK WITH TAKUMA AIHARA AND AARON CHAN)

The study of derived categories has been one of the central themes in representation theory. From Morita theoretic perspective, tilting complexes play an important role because they induce derived equivalences which preserve many homological properties. However, for a given algebra, it is difficult to construct tilting complexes in general. From the viewpoint of τ-tilting theory introduced in [AIR], two-term tilting complexes can be constructed using a special class of modules, called (support) τ-tilting module. In particular, for a symmetric algebra, there is a bijection between basic two-term tilting complexes and support τ-tilting modules.

The aim of this talk is to classify support τ-tilting modules over Brauer tree algebras. A Brauer tree algebra is a (representation-finite) symmetric algebra defined by a tree (graph). By using a "walk" on a tree, which we call admissible weighted line, we give a combinatorial description of τ-tilting modules.

Recently, Antipov and Zvonareva also gave a classification of two-term tilting complexes (or equivalently support τ-tilting modules) over multiplicity-free Brauer tree algebras. Our result is more combinatorial and generalizes that of [AZ, Z].

References

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