

Tilting modules over Auslander-Gorenstein algebras

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For a finite dimensional algebra Λ and a non-negative integer n , we characterize when the set $\text{tilt}_n\Lambda$ of additive equivalence classes of tilting modules with projective dimension at most n has a minimal (or equivalently, minimum) element. This generalizes results of Happel-Unger. Moreover, for an n -Gorenstein algebra Λ with $n \geq 1$, we construct a minimal element in $\text{tilt}_n\Lambda$. As a result, we give equivalent conditions for a k -Gorenstein algebra to be Iwanaga-Gorenstein. Moreover, for an 1-Gorenstein algebra Λ and its factor algebra $\Gamma = \Lambda/(e)$, we show that there is a bijection between $\text{tilt}_1\Lambda$ and the set $\text{stilt}\Gamma$ of isomorphism classes of basic support τ -tilting Γ -modules, where e is an idempotent such that $e\Lambda$ is the additive generator of projective-injective Λ -modules. This is a joint work with Osamu Iyama.

REFERENCES

1. O.Iyama and X. Zhang, *Tilting modules over Auslander-Gorenstein algebras*, Pacific J. Math., **298**(2) (2019), 399-416.