

Periodicity of d -cluster tilted algebras

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It is well-known that any maximal Cohen-Macaulay module over a hypersurface has a periodic free resolution of period 2. Auslander, Reiten and Buchweitz have used this periodicity to explain the existence of periodic projective resolutions over the classical finite-dimensional preprojective algebras, which arise as stable endomorphism rings of Cohen-Macaulay modules over hypersurfaces of finite CM-type. In fact, these algebras are periodic, meaning that they have periodic projective resolutions as bimodules and thus periodic Hochschild cohomology as well. We generalize this construction of periodic algebras to the context of Iyama's higher AR-theory by considering endomorphism rings of periodic d -cluster tilting objects in triangulated categories. Consequently we obtain a unified explanation of the periodicity of certain (deformed) preprojective algebras of generalized Dynkin type as well as of higher preprojective algebras of type A appearing in the work of Iyama and Oppermann.