

On the rate of generic Gorenstein K -algebras

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The rate of a standard graded K -algebra A is a measure of the growth of the shifts in a minimal free resolution of K as A -module. In particular A has rate one if and only if A is Koszul. It is known that a generic Artinian Gorenstein algebra of socle degree three is Koszul. We extend this result proving that a generic Artinian Gorenstein algebra of socle degree $s \geq 3$ has rate $\lfloor \frac{s}{2} \rfloor$. In the process we need to prove that a generic Artinian Gorenstein K -algebra of embedding dimension at least four and socle degree $s \geq 3$ is generated in degree $\lfloor \frac{s}{2} \rfloor + 1$. This gives a partial positive answer to a longstanding conjecture stated by M. Boij on the resolution of a generic Artinian Gorenstein ring of odd socle degree. This is a joint work with M.Boij, E. De Negri and A. De Stefani.