

Külshammer ideals of graded categories and Hochschild cohomology
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For a symmetric algebra Λ over a field of positive characteristic p , the sequence of Külshammer ideals in the center of Λ

$$K_r^{cl} = \{a \in \Lambda \mid (a, b) = 0 \text{ for } b \in \Lambda \text{ such that } b^{p^r} \in [\Lambda, \Lambda]\},$$

where $(-, -)$ is a symmetrizing form, is an invariant of the derived category. These ideals were applied to distinguish various algebras up to derived equivalence. We generalize the notion of Külshammer ideals to the setting of a graded category. This allows us to define and study some properties of Külshammer type ideals in the graded center of a triangulated category and in the Hochschild cohomology of an algebra, providing new derived invariants. Further properties of Külshammer ideals will be discussed in the case where the category is d -Calabi-Yau.