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Periodic behavior of Auslander-Reiten translation

Assume R is the poset of positive roots of a finite root system Φ and $J(R)$ is the poset of order ideals of R . Let $D^b(J(R))$ be the bounded derived category of the incidence algebra of $J(R)$. Now, assume H is a hereditary algebra of type Φ . Let $Tor(H)$ be the poset of torsion classes and B_H be the incidence algebra of $Tor(H)$. Chapoton conjectures that there is a triangulated equivalence between the bounded derived categories $D^b(J(R))$ and $D^b(B_H)$. He also conjectures that $D^b(J(R))$ is fractionally Calabi-Yau, or in other words, some non-zero power of the Auslander-Reiten translation equals some power of the shift functor. Inspired by these conjectures, we investigate the action of Auslander-Reiten translation τ on the bounded derived category of the incidence algebra of some parabolic analogues of these posets. We show that the Auslander-Reiten translation τ acting on the corresponding Grothendieck groups (which is called Coxeter transformation in this context) has finite order.