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Auslander's Theorem for group coactions on noetherian graded down-up algebras.

Let $\Bbbk$ be a field of characteristic zero. M. Auslander proved that if G is a finite subgroup of $\mathrm{GL}_n(\Bbbk)$, containing no pseudo-reflections (e.g. subgroups of $\mathrm{SL}_n(\Bbbk)$), acting linearly on the commutative polynomial ring $A = \Bbbk[x_1, \ldots, x_n]$, with fixed subring A^G, then the natural map from the skew group algebra $A * G$ to $\mathrm{End}_{A^G}(A)$ is an isomorphism of graded algebras. We extend this result to Hopf actions on Artin-Schelter regular algebras by proving that if G is an inner-faithful, homogeneous, finite group coaction on a noetherian graded down-up algebra A, coacting on A with trivial homological codeterminant, then there is a natural graded algebra isomorphism $A\#H \cong \mathrm{End}_{A^H}(A)$, for $H = \Bbbk^G$; this result provides a relationship between certain modules over A^H and those over $A\#H$. (Received February 04, 2018)