Let $k$ be a field, $A$ an $\mathbb{N}$-graded $k$-algebra, and $G$ be a group of graded automorphisms of $A$. Auslander proved that in case $A$ is the commutative polynomial ring, the skew group ring $A\#G$ is isomorphic to the ring of $A^G$-linear endomorphisms of $A$ if and only if $G$ does not contain a nontrivial pseudo-reflection.

Recent work of Bao, He and Zhang have couched the existence of such an isomorphism for a general graded algebra in terms of the pertinency of the group action, which is the difference in Gelfand-Kirillov dimensions of $A\#G$ and $(A\#G)/\langle f \rangle$ where $f$ is the Reynolds idempotent. In this preliminary report, we provide some new computations of this invariant when $A$ is the $(-1)$-skew polynomial ring in $n$ variables, and $S_n$ acts as permutations of $A$, the details of which use commutative algebra in an interesting way. (Received September 13, 2016)