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Ellen E Kirkman* (kirkman@wfu.edu), Box 7388 Reynolda Station, Wake Forest University, Winston-Salem, NC 27109, and **James J Kuzmanovich** and **James J Zhang**. *Reflection Hopf Algebras: The Dual of a Group Algebra*. Preliminary report.

The Shephard-Todd-Chevalley Theorem states that when a finite group G acts linearly on a commutative polynomial ring $A = k[x_1, \dots, x_n]$ over a field k of characteristic zero, the invariant subring A^G is a commutative polynomial ring if and only if G is generated by reflections. More generally, let H be a semi-simple Hopf algebra that acts on an Artin-Schelter regular algebra A so that A is an H -module algebra, the grading on A is preserved, and the action of H on A is inner faithful. When A^H is Artin-Schelter regular we call H a reflection Hopf algebra for A . We present some examples of such pairs (A, H) when $H = k^G$ is the dual of a group algebra, and consider when $H = k^G$ is not a Hopf reflection algebra for any AS regular algebra A . (Received January 16, 2015)