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**Ellen E. Kirkman\*** ([kirkman@wfu.edu](mailto:kirkman@wfu.edu)), Box 7388 Reynolda Station, Department of Mathematics and Statistics, Wake Forest University, Winston-Salem, NC 27109. *Reflection Hopf Algebras*. 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 finite dimensional 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  $(A, H)$ . (Received July 17, 2017)