

1035-16-1293

Ellen E. Kirkman* (kirkman@wfu.edu), P.O. Box 7388, Wake Forest University, Winston-Salem, NC 27109, and **James J. Kuzmanovich** and **James J. Zhang**. *Reflections of Regular Algebras*.

Let A be an Artin-Schelter regular algebra. We call a finite group G of graded automorphisms of A a reflection group if the fixed subring A^G is a regular algebra. The Shephard-Todd-Chevalley Theorem completely classifies the reflection groups of $k[x_1, \dots, x_n]$. We show that there are reflection groups of skew polynomial rings that are not isomorphic (as groups) to classical reflection groups. Further, we consider the regular algebra $C = \mathcal{O}_q(M_2)$, the quantum 2×2 -matrix algebra. We find a particular Hopf algebra H whose comodule action on C has the coinvariant subring $C^{co H}$ a skew polynomial ring. Hence one can think of H as a “quantum reflection group” of C . Further we show there is no group G acting on C with C^G isomorphic to $C^{co H}$, so that invariants under Hopf actions provide regular fixed subrings not obtainable under the action of a finite group. (Received September 19, 2007)