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Yuri Bazlov*, Yuri.Bazlov@manchester.ac.uk, and **Arkady Berenstein**. *Noncommutative reflections*.

Groups generated by reflections are ubiquitous in mathematics and play a major role in modern representation theory. We introduce their noncommutative-geometric generalization via the notion of a reflection of a noncommutative space (graded associative algebra) A . If S is a set of reflections of A , then S -twisted derivations of A , S , and A may generate an algebra with triangular decomposition, which serves as a noncommutative analogue of a nil Hecke algebra.

More specifically, if A is an n -dimensional quantum plane, we show that A can be obtained as a Drinfeld twist of ordinary polynomial algebra and that the triangular decomposition property holds. This explains recent constructions due to the authors and independently due to Kirkman, Kuzmanovich and Zhang. Back in the classical, “commutative”, setting, the results still apply and yield nil Hecke algebras for arbitrary complex reflection groups. (Received September 21, 2011)