Hopf25

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Twists of reflection groups and Cherednik algebras

Twisting group algebras of certain reflection groups G yields Hopf algebras H that admit noncommutative rational Cherednik-type algebras. For Coxeter groups of type B or D, H is the group algebra of a "mystic reflection" group, and standard Cherednik-type modules correspond to pairs of Young diagrams, with twisting flipping one diagram (`https://arxiv.org/abs/2501.06673`, with Jones-Healey). In contrast, Shephard-Todd complex reflection groups $G = G(m, p, n)$ have twists of order $m > 2$, producing novel Cherednik-type algebras over non-cocommutative H whose representations are yet to be explored. Over number fields, their finite-dimensional quotients appear to be (Galois) twisted forms of restricted Cherednik algebras for G.