

Twist automorphisms of quantum unipotent cells and dual canonical bases

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Quantum unipotent cell is introduced by De Concini-Procesi [3] as a quantum analogue of the coordinate ring of unipotent cells and they proved an isomorphism between quantum analogue of coordinate ring of intersection of unipotent subgroup and shifted Gaussian cells in finite type. In this talk, we construct quantum analogue of twist automorphism whose classical counterpart is introduced by Berenstein-Fomin-Zelevinsky [1] and Berenstein-Zelevinsky [2] in the study of total positivity for Schubert varieties. We prove the quantum twist automorphism preserves the dual canonical basis of quantum unipotent cells. Furthermore quantum cluster monomials is also preserved under the quantum twist automorphism in symmetric case using the additive categorification by Geiss-Leclerc-Schröer [4]. This is a joint work [5] with Hironori Oya.

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