Combinatorial Fock space and representations of quantum groups at roots of unity

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Abstract

The classical Fock space arises in the context of mathematical physics, where one would like to describe the behaviour of certain configurations with an unknown number of identical, non-interacting particles. By work of Leclerc and Thibon, it(s q-analogue) has a realisation in terms of the affine Hecke algebra of type A and it controls the representation theory of the corresponding quantum group at a root of unity. In the talk we will propose a generalisation of the q-Fock space to all Lie types. This gadget can also be realised in terms of affine Hecke algebra and captures decomposition numbers for quantum groups at roots of unity.