

Workshop on Combinatorial Hopf Algebras
and Macdonald Polynomials

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Affine tableaux and the double affine Hecke algebra

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Abstract

The irreducible representations (irreps) of the symmetric group S_n are parameterized by Young diagrams λ . A given irrep has a basis indexed by Young tableaux of shape λ . In fact, this basis consists of weight vectors for a commutative subalgebra X of the group algebra $\mathbb{C}S_n$.

The double affine Hecke algebra (DAHA) is a deformation of the group algebra of the *affine* symmetric group \widehat{S}_n , and also contains a commutative subalgebra X .

Not every irrep of the DAHA has a basis of weight vectors (and in fact it is quite difficult to parameterize all of its irreps), but if we restrict our attention to those that do, these are parameterized by “affine shapes” $\widehat{\lambda/\mu}$ and have a basis of X -weight vectors indexed by the “affine tableaux” of that shape. In this talk, we will construct these irreps.

This is joint work with Takeshi Suzuki.