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Universal Verma modules and the Misra–Miwa Fock space

The Misra–Miwa v-deformed Fock space is a representation of the quantized affine algebra of type A. It has a standard basis indexed by partitions, and the non-zero matrix entries of the action of the Chevalley generators with respect to this basis are powers of v. Partitions also index the polynomial Weyl modules for the integral quantum group associated to $\mathrm{gl}(N)$, as N tends to infinity. We explain how the powers of v which appear in the Misra–Miwa Fock space also appear naturally in the context of Weyl modules. The main tool we use is the Shapovalov determinant for a universal Verma module.

This is joint work with Arun Ram.