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Title: Quantized symplectic actions and W-algebras

Abstract: With a nilpotent element in a semisimple Lie algebra $\mathbf{g}$, one associates a finitely generated associative algebra W called a W-algebra of finite type. This algebra is obtained from the universal enveloping algebra $U(\mathbf{g})$ by a certain Hamiltonian reduction. The study of W-algebras traces back to the celebrated Kostant paper "On Whittaker vectors and representation theory", 1978. We observe that W is the invariant algebra for an action of a reductive group G with Lie algebra $\mathbf{g}$ on a quantized symplectic affine variety and use this observation to study W. Our results include a relation between the sets of prime ideals of W and of the corresponding universal enveloping algebra and separation of elements of W by finite dimensional representations.