

The sheets of a Lie algebra and finite W-algebras

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Finite W -algebras were introduced into the mathematical literature by Premet. They are sometimes referred to as enveloping algebras of Slodowy slices and may be thought of as something analogous to the enveloping algebra of a reductive Lie algebra. In recent years they have been successfully applied to the study of representations and ideals of enveloping algebras. One notable achievement was the confirmation of Humphreys' conjecture on small representations of modular Lie algebras.

I shall explain how certain geometrical properties of a nilpotent orbit in a classical Lie algebra affect the representation theory of the associated finite W -algebra. I shall go on to give an application to the primitive ideal structure of the enveloping algebra.