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Finite-dimensional irreducible representations of equivariant map algebras

We consider an affine algebraic variety X, a finite-dimensional simple Lie algebra L and a finite group G acting on both X and L by automorphisms. The space of G-equivariant regular maps from X to L is a Lie algebra under pointwise multiplication, called an equivariant map algebra. Examples of equivariant map algebras are (twisted or untwisted) multiloop algebras, current algebras, n-point Lie algebras, and the Onsager (Lie) algebra.

In this talk I will present a classification of finite-dimensional irreducible representations of equivariant map algebras: They are (almost) all evaluation representations. This result recovers the previously known classifications, for example for the multiloop, current and Onsager algebras. In addition, we can easily derive the precise structure of the finite-dimensional irreducible representations in previously unknown cases. Some examples will be presented.

The talk is based on joint work with Alistair Savage and Prasad Senesi.