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Universal central extensions of infinite dimensional Lie algebras

Central extensions play an important role in the theory of infinite dimensional Lie algebras. They allow one to construct bigger Lie algebras in a controlled way, which often have a more interesting representation theory than the original Lie algebra. A prime example is the construction of the (derived algebra of the) affine Kac–Moody algebra as the universal central extension of a twisted or untwisted loop algebra.

In this talk I will describe various constructions of (universal) central extensions. Special emphasis will be given to multiloop algebras and, more generally, Lie algebras that arise as twisted forms of (generalized) current algebras.