

08: Representation Theory

W/11849: Highest-weight theory for Lie algebras of truncated currents

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Let \mathfrak{g} be a Lie algebra over a field \mathbb{k} , and fix a positive integer N . The Lie algebra

$$\hat{\mathfrak{g}} = \mathfrak{g} \otimes_{\mathbb{k}} \mathbb{k}[t]/t^{N+1}\mathbb{k}[t]$$

is called a *truncated current* Lie algebra. In this talk we explore highest-weight theories for such Lie algebras, and discuss a recent finding that provides reducibility criteria for the Verma modules of a theory in those cases where \mathfrak{g} is either a semisimple finite-dimensional Lie algebra, the Virasoro algebra, a Heisenberg algebra, or an affine Kac-Moody Lie algebra. Examples are considered to illustrate the general picture, which is remarkably uniform.

This talk is aimed at non-specialists.