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Central Extensions of
Restricted Affine Nilpotent Lie Algebras $n_+(A_1^{(1)})(p)$

Consider the maximal nilpotent subalgebra $n_+(A_1^{(1)})$ of the simplest affine algebra $A_1^{(1)}$ which is one of the $\mathbb{N}$-graded Lie algebras with minimal number of generators. We show that truncated versions of this algebra in positive characteristic admit the structure of a family of restricted Lie algebras. We compute the ordinary and restricted 1- and 2-cohomology spaces with trivial coefficients by giving bases. With these we explicitly describe the restricted 1-dimensional central extensions.

Keywords: Restricted Lie algebra, cohomology, central extension, affine Lie algebra.

MSC: 17B50, 17B56,17B67, 17B70.