

**Title:** The Schur multiplier and stem covers of Leibniz  $n$ -algebras

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Given a free presentation  $0 \rightarrow \mathcal{R} \rightarrow \mathcal{F} \xrightarrow{\rho} \mathcal{G} \rightarrow 0$  of a Leibniz  $n$ -algebra  $\mathcal{G}$ , the quotient  $\frac{\mathcal{R} \cap [\mathcal{F}, \dots, \mathcal{F}]}{[\mathcal{R}, \mathcal{F}, \dots, \mathcal{F}]}$  is known as the Schur multiplier of  $\mathcal{G}$ . In the article, we construct a four-term exact sequence relating the Schur multiplier of  $\mathcal{G}$  and  $\mathcal{G}/\mathcal{N}$ , from which we derive some formulas concerning dimensions of the underlying vector spaces of the corresponding Schur multipliers. Additionally, this exact sequence is useful to characterize nilpotency of Leibniz  $n$ -algebras. Finally, we characterize stem covers of Leibniz  $n$ -algebras, showing their existence in case of finite dimension. We also analyze the interaction between stem covers of Leibniz  $n$ -algebras and the Schur multiplier.

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