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### **On Extensions of Nilpotent Leibniz and Diassociative Algebras**

Given a pair of nilpotent Lie algebras  $A$  and  $B$ , an extension  $0 \rightarrow A \rightarrow L \rightarrow B \rightarrow 0$  is not necessarily nilpotent. However, if  $L_1$  and  $L_2$  are extensions which correspond to lifts of homomorphism  $\Phi: B \rightarrow \text{Out}(A)$ , it has been shown that  $L_1$  is nilpotent if and only if  $L_2$  is nilpotent. In the present paper, we prove analogues of this result for each algebra of Loday. As an important consequence, we thereby gain its associative analogue as a special case of diassociative algebras.

**Keywords:** Nilpotent extensions, Leibniz algebras, diassociative, dendriform, Zinbiel.

**MSC:** 17A30, 17A01, 17A32.