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Central extensions of null-filiform and naturally graded filiform non-Lie Leibniz algebras. (English summary)

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This paper is devoted to the classifications of some nilpotent Leibniz algebras. The technique of central extensions of nilpotent Lie algebras was firstly developed in [T. Skjelbred and T. Sund, "On the classification of nilpotent Lie algebras", research report, Mat. Inst., Univ. Oslo, 1977]. The advantage of this technique is that any nilpotent Lie algebra can be obtained as a central extension of some nilpotent algebra of lower dimension. The adaptation of the method of central extensions for nilpotent Leibniz algebras was suggested in [I. S. Rakhimov, S. J. Langari and M. B. Langari, Int. J. Algebra **3** (2009), no. 5-8, 271–280; MR2519573].

In the present paper the authors classify all central extensions of null-filiform and naturally graded filiform non-Lie Leibniz algebras. Namely, they prove that the central extensions of complex null-filiform Leibniz algebras and the k-dimensional central extensions ($k \geq 5$) of naturally graded filiform non-Lie Leibniz algebras are split.

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