

Leonid A. Kurdachenko, Javier Otal, Igor Ya. Subbotin
On some properties of the upper central series in Leibniz algebras

Comment.Math.Univ.Carolin. 60,2 (2019) 161–175.

Abstract: This article discusses the Leibniz algebras whose upper hypercenter has finite codimension. It is proved that such an algebra L includes a finite dimensional ideal K such that the factor-algebra L/K is hypercentral. This result is an extension to the Leibniz algebra of the corresponding result obtained earlier for Lie algebras. It is also analogous to the corresponding results obtained for groups and modules.

Keywords: Leibniz algebra; Lie algebra; center; central serie; hypercenter; nilpotent residual

AMS Subject Classification: 17A32, 17A60, 17A99

REFERENCES

- [1] Baer R., *Endlichkeitskriterien für Kommutatorgruppen*, Math. Ann. **124** (1952), 161–177 (German).
- [2] Ballester-Bolínches A., Camp-Mora S., Kurdachenko L. A., Otal J., *Extension of a Schur theorem to groups with a central factor with a bounded section rank*, J. Algebra **393** (2013), 1–15.
- [3] Chupordia V. A., Kurdachenko L. A., Subbotin I. Ya., *On some “minimal” Leibniz algebras*, J. Algebra Appl. **16** (2017), no. 5, 1750082, 16 pages.
- [4] Dixon M. R., Kurdachenko L. A., Otal J., *On groups whose factor-group modulo the hypercenter has finite section p -rank*, J. Algebra **440** (2015), 489–503.
- [5] Dixon M. R., Kurdachenko L. A., Otal J., *On the structure of some infinite dimensional linear groups*, Comm. Algebra **45** (2017), no. 1, 234–246.
- [6] de Falco M., de Giovanni F., Musella C., Sysak Y. P., *On the upper central series of infinite groups*, Proc. Amer. Math. Soc. **139** (2011), no. 2, 385–389.
- [7] Franciosi S., de Giovanni F., Kurdachenko L. A., *The Schur property and groups with uniform conjugacy classes*, J. Algebra **174** (1995), no. 3, 823–847.
- [8] Kurdachenko L. A., Otal J., Pypka A. A., *Relationships between factors of canonical central series of Leibniz algebras*, Eur. J. Math. **2** (2016), no. 2, 565–577.
- [9] Kurdachenko L. A., Otal J., Subbotin I. Ya., *On a generalization of Baer theorem*, Proc. Amer. Math. Soc. **141** (2013), no. 8, 2597–2602.
- [10] Kurdachenko L. A., Pypka A. A., Subbotin I. Ya., *On some relations between the factors of the upper and lower central series in Lie algebras*, Serdica Math. J. **41** (2015), no. 2–3, 293–306.
- [11] Kurdachenko L. A., Shumyatsky P., *The ranks of central factor and commutator groups*, Math. Proc. Cambridge Philos. Soc. **154** (2013), no. 1, 63–69.
- [12] Kurdachenko L. A., Subbotin I. Ya., *On the relationships between the factors of upper and lower central series in groups and other algebraic structures*, Note Mat. **36** (2016), suppl. 1, 35–50.
- [13] Neumann B. H., *Groups with finite classes of conjugate elements*, Proc. London Math. Soc. (3) **1** (1951), 178–187.