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SOME UPPER BOUNDS FOR THE DIMENSION OF THE c-NILPOTENT MULTIPLIER OF A PAIR OF LIE ALGEBRAS

Homayoon Arabyani

Mohammad Javad Sadeghifard

Department of Mathematics
Neyshabur Branch, Islamic Azad University
Neyshabur, Iran

e-mail: arabyani.h@gmail.com
h.arabyani@iau-neyshabur.ac.ir
math.sadeghifard85@gmail.com

and

Sedigheh Sheikh-Mohseni

Higher Education Center of Eghlid, Eghlid, Iran

e-mail: sh.mohseni.s@gmail.com

Abstract

The notion of the Schur multiplier of a Lie algebra L was introduced by Batten in 1996. Recently, the first author introduced the concept of the c-nilpotent multiplier of a pair of Lie algebras and gave some exact sequences for the c-nilpotent multiplier of a pair of Lie algebras. The purpose of this paper is to derive some inequalities for dimension of the c-nilpotent multiplier of a pair of Lie algebras.

Keywords: pair of Lie algebras, Schur multiplier, nilpotent Lie algebra.

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References

[1] H. Arabyani, *Bounds for the dimension of the c-nilpotent multiplier of a pair of Lie algebras*, Bull. Iranian Math. Soc. **43** (2017) 2411–2418.
doi:10.1142/S1793557119500074

[2] H. Arabyani, F. Saeedi, M.R.R. Moghaddam and E. Khamseh, *Characterization of nilpotent Lie algebras pair by their Schur multipliers*, Comm. Algebra **42** (2014) 5474–5483. doi:10.1080/00927872.2012.677081

[3] H. Arabyani and H. Safa, *Some properties of c-covers of a pair of Lie algebras*, Quaest. Math. **42** (2019) 37–45. doi:10.2989/16073606.2018.1437482

[4] H. Arabyani, *Some results on the c-nilpotent multiplier of a pair of Lie algebras*, Bull. Iranian Math. Soc. **45** (2019) 205–212. doi:10.1007/s41980-018-0126-6

[5] P. Batten, K. Moneyhun and E. Stitzinger, *On characterizing nilpotent Lie algebras by their multipliers*, Comm. Algebra **24** (1996) 4319–4330. doi:10.1080/00927879608825817

[6] G. Ellis, *Nonabelian exterior products of Lie algebras and an exact sequence in the homology of Lie algebras*, J. Pure Appl. Algebra **46** (1987) 111–115. doi:10.1016/0022-4049(87)90089-2

[7] G. Ellis, *The Schur multiplier of a pair of groups*, Appl. Categ. Structures **6** (1998) 355–371. doi:10.1023/A:1008652316165

[8] G. Karpilovsky, The Schur Multiplier (Clarendon Press, Oxford, 1987).

[9] E.I. Marshal, *The Frattini subalgebra of a Lie algebra*, J. London Math. Soc. **42** (1967) 416–422. doi:10.1112/jlms/s1-42.1.416

[10] K. Moneyhun, *Isoclinisms in Lie algebras*, Algebras Groups Geom. **11** (1994) 9–22.

[11] F. Saeedi, H. Arabyani and P. Niroomand, *On dimension of Schur multiplier of nilpotent Lie algebra* II, Asian-Eur. J. Math. **10** (4) (2017) 1750076 (8 pages). doi:10.1142/S1793557117500760

[12] F. Saeedi, A.R. Salemkar and B. Edalatzadeh, *The commutator subalgebra and Schur multiplier of a pair of nilpotent Lie algebras*, J. Lie Theory **21** (2011) 491–498.

[13] H. Safa and H. Arabyani, *On c-nilpotent multiplier and c-covers of a pair of Lie algebras*, Comm. Algebra **45** (2017) 4429–4434. doi:10.1080/00927872.2016.1265125

[14] A.R. Salemkar and S. Alizadeh Niri, *Bounds for the dimension of the Schur multiplier of a pair of nilpotent Lie algebras*, Asian-Eur. J. Math. **5** (2012) 1250059 (9 pages). doi:10.1142/S1793557112500593

[15] A.R. Salemkar, B. Edalatzadeh and M. Araskhan, *Some inequalities for the dimension of the c-nilpotent multiplier of Lie algebras*, J. Algebra **322** (2009) 1575–1585. doi:10.1016/j.jalgebra.2009.05.036

[16] I. Schur, *Über die Darstellung der endlichen Gruppen durch gebrochene lineare Substitutionen*, J. Reine Angew. Math. **127** (1904) 20–50. doi:10.1515/crll.1904.127.20