CARPATHIAN J. MATH. 33 (2017), No. 2, 257 - 263
Online version available at http://carpathian.ubm.ro
Print Edition: ISSN 1584 - 2851 Online Edition: ISSN 1843 - 4401

Linear representation of Abel-Grassmann groups

DAVID STANOVSKÝ

ABSTRACT.

We describe a linear representation for Abel-Grassmann groups. As a consequence, we obtain or improve many previous results. For example, we calculate the number of Abel-Grassmann groups of order < 512 up to isomorphism.

Acknowledgements. Partly supported by the GAČR grant 13-01832S

REFERENCES

[1] Ahmad, I., Rashad, M. and Shah, M., *Constructions of some algebraic structures from each other*, Int. Math. Forum 7, (2012), No. 53-56, 2759–2766
[2] Cho, J. R., Ježek, J. and Kepka, T., *Paramedial groupoids*, Czech. Math. J., **49** (1999), No. 2, 277–290
[3] Dudek, W. and Gigoń, R.., *Congruences on completely inverse AG**-groupoids*, Quasigroups Relat. Syst., **20** (2012), No. 2, 203–209
[4] Dudek, W. and Gigoń, R., *Completely inverse AG**-groupoids*, Semigroup Forum 87, (2013), No. 1, 201–229
[5] The GAP Group, *GAP – Groups, Algorithms, and Programming, Version 4.5.7*, 2012, (http://www.gap-system.org)
[6] Gumm, H. P. and Ursini, A., *Ideals in universal algebras*, Algebra Universalis, **19** (1984), 45–54
[7] Ježek, J. and Kepka, T., *Medial groupoids*, Rozpravy ČSAV, Rada mat. a přír. věd 93/2, 1983, 93 pp.
[8] Kamran, M. S., *Conditions for LA-semigroups to resemble associative structures*, Ph. D. Thesis, Quaid-i-Azam Universiti, Islamabad, 1993
[9] Khan, M. and Anis, S., *An analogy of Clifford decomposition theorem for Abel-Grassmann groupoids.* Algebra Colloq., **21** (2014), No. 2, 347–353
[10] Němec, P. and Kepka, T., *T-quasigroups I* , Acta Univ. Carolin. Math. Phys., **12** (1971), No. 1, 39–49
[11] Monzo, R. A. R.*On the structure of completely inverse AG**-groupoids*, https://arxiv.org/abs/1502.06516
[12] Mushtaq, Q. and Kamran, M. S., *On left almost groups*, Proc. Pak. Acad. of Sciences, **33** (1996), 1–2
[13] Mushtaq, Q. and Khan, K., *Semilattice decomposition of locally associative AG**-groupoids*, Algebra Colloq., **16** (2009), 17–22
[14] Protić, P., *Congruencies on an inverse AG**-groupoid via the natural partial order*, Quasigroups and Related Systems, **17** (2009), No. 2, 283–290
[15] Protić, P., *Some remarks on Abel-Grassmann's groups*, Quasigroups and Related Systems, **20** (2012), 267–274
[16] Shah, M. and Ali, A. *Some structural properties of AG-groups*, Int. Math. Forum, **6** (2011), No. 33–36, 1661–1667
[17] Shah, M., Gretton, C. and Sorge, V., *Enumerating AG-groups with a study of Smaradache AG-groups*, Int. Math. Forum, **6** (2011), No. 61–64, 3079–3086
[18] Toyoda, K., *On axioms of linear functions*, Proc. Imp. Acad. Tokyo, **17** (1941), 221–227

DEPARTMENT OF ALGEBRA
FACULTY OF MATHEMATICS AND PHYSICS
CHARLES UNIVERSITY
SOKOLOVSKÁ 83, 18675 PRAHA 8, CZECH REPUBLIC
E-mail address: stanovsk@karlin.mff.cuni.cz

Received: 02.02.2017; In revised form: 08.06.2017; Accepted: 17.06.2017
2010 *Mathematics Subject Classification.* 20N05, 20N02.
Key words and phrases. *Abel-Grassmann group, AG**-groupoid, paramedial quasigroup, affine representation.*