

ON PSEUDO BE -ALGEBRAS

RAJAB ALI BORZOOEI

Department of Mathematics
Shahid Beheshti University of Tehran, Tehran, Iran

e-mail: borzooei@sbu.ac.ir

ARSHAM BORUMAND SAEID

Department of Mathematics
Shahid Bahonar University of Kerman, Kerman, Iran

e-mail: arsham@uk.ac.ir

AKBAR REZAEI

Department of Mathematics, Payame Noor University
P.O. Box. 19395-3697, Tehran, Iran

e-mail: Rezaei@pnu.ac.ir

AKEFE RADFAR

Department of Mathematics, Payame Noor University
P.O. Box. 19395-3697, Tehran, Iran

e-mail: Radfaratefe@gmail.com

AND

REZA AMERI

Department of Mathematics, Tehran University
Tehran, Iran

e-mail: rameri@ut.ac.ir

Abstract

In this paper, we introduce the notion of pseudo BE -algebra which is a generalization of BE -algebra. We define the concepts of pseudo subalgebras and pseudo filters and prove that, under some conditions, pseudo subalgebra can be a pseudo filter. We prove that every homomorphic image and pre-image of a pseudo filter is also a pseudo filter. Furthermore, the notion

of pseudo upper sets in pseudo BE -algebras introduced and is proved that every pseudo filter is an union of pseudo upper sets.

Keywords: BE -algebra, Pseudo BE -algebra, pseudo filter, pseudo upper set.

2010 Mathematics Subject Classification: 06F35,03G25,03B52.

REFERENCES

- [1] S.S. Ahn and Y.H. So, *On ideals and upper sets in BE -algebras*, Sci. Math. Jpn. **68** (2) (2008) 279–285.
- [2] S.S. Ahn and K.S. So, *On generalized upper sets in BE -algebras*, Bull. Korean Math. Soc. **46** (2) (2009) 281–287. doi:10.4134/BKMS.2009.46.2.281
- [3] S.S. Ahn, Y.H. Kim and J.M. Ko, *Filters in commutative BE -algebras*, Bull. Korean Math. Soc. **27** (2) (2012) 233–242. doi:10.4134/CKMS.2012.27.2.233
- [4] A. Borumand Saeid, A. Rezaei and R.A. Borzoei, *Some types of filters in BE -algebras*, (submitted).
- [5] G. Georgescu and A. Iorgulescu, *Pseudo-MV algebras: a noncommutative extension of MV algebras*, Information Technology (Bucharest, 1999), 961–968, Infocore, Bucharest.
- [6] G. Georgescu and A. Iorgulescu, *Pseudo-BL algebras: a noncommutative extension of BL algebras*, in Abstracts of the Fifth International Conference FSTA 2000, Slovakia, February 2000, 90–92.
- [7] G. Georgescu and A. Iorgulescu, *Pseudo-BCK algebras: an extension of BCK-algebras*, Combinatorics, computability and logic, 97–114, Springer Ser. Discrete Math. Theor. Comput. Sci., Springer, London, 2001.
- [8] Y. Imai and K. Iseki, *On axiom systems of propositional Calculi*, XIV proc. Jpn. Academy **42** (1966) 19–22.
- [9] Y.B. Jun, H.S. Kim and J. Neggers, *On pseudo-BCI ideals of pseudo-BCI algebras*, Math. Bec. **58** (2006) 39–46.
- [10] H.S. Kim and Y.H. Kim, *On BE -algebras*, Sci, Math, Jpn. **66** (1) (2007) 113–117.
- [11] Y.H. Kim and K.S. So, *On minimality in pseudo-BCI algebras*, Commun. Korean Math. Soc. **27** (1) (2012) 7–13. doi:10.4134/CKMS.2012.27.1.007
- [12] B.L. Meng, *On filters in BE -algebras*, Sci. Math. Jpn. **71** (2010), 201–207.

- [13] J. Rachunek, *A non commutative generalization of MV-algebras*, Czechoslovak Math. J. **52** (127) (2002) 255–273.
- [14] A. Rezaei and A. Borumand Saeid, *Some results in BE-algebras*, Analele Universitatii Oradea Fasc. Matematica, Tom XIX (2012), 33–44.
- [15] A. Rezaei and A. Borumand Saeid, *Commutative ideals in BE-algebras*, Kyungpook Math. J. **52** (2012) 483–494. doi:10.5666/KMJ.2012.52.4.483
- [16] A. Walendziak, *On commutative BE-algebras*, Sci. Math. Jpn. **69** (2) (2008) 585–588.
- [17] A. Walendziak, *On axiom systems of pseudo-BCK algebras*, Bull. Malays. Math. Sci. Soc. **34** (2) (2011) 287–293.

Received 22 February 2013

Revised 11 May 2013

