

FOLDING THEORY OF IMPLICATIVE AND OBSTINATE IDEALS IN BL-ALGEBRAS

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Abstract

In this paper, the concepts of n -fold implicative ideals and n -fold obstinate ideals in BL -algebras are introduced. With respect to this concepts, some related results are given. In particular, it is proved that an ideal is an n -fold implicative ideal if and only if is an n -fold Boolean ideal. Also, it is shown that a BL -algebra is an n -fold integral BL -algebra if and only if trivial ideal $\{0\}$ is an n -fold obstinate ideal. Moreover, the relation between n -fold obstinate ideals and n -fold (integral) obstinate filters in BL -algebras are studied by using the set of complement elements. Finally, it is proved that ideal I of BL -algebra L is an n -fold obstinate ideal if and only if $\frac{L}{I}$ is an n -fold obstinate BL -algebra.

Keywords: BL -algebra, ideal, n -fold implicative ideal, n -fold obstinate ideal.

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REFERENCES

- [1] C.C. Chang, *Algebraic analysis of many valued logics*, Trans. Amer. Math. Soc. **88** (1958) 467–490.
doi:10.1090/S0002-9947-1958-0094302-9
- [2] A. Di Nola, G. Georgescu and A. Iorgulescu, *Pseudo BL-algebras Part I*, Mult. Val. Logic, **8** (2002) 673–714.
- [3] A. Di Nola and L. Leustean, *Compact representations of BL-algebras*, Department of Computer Science, University Aarhus. BRICS Report Series, (2002).
- [4] M. Haveshki and E. Eslami, *n -Fold filters in BL-algebras*, Math. Log. Quart. **54** (2008) 178–186.
- [5] S. Motamed and A.B. Saeid, *n -Fold obstinate filters in BL-algebras*, Neural. Comput. Applic. **20** (2011) 461–472.

- [6] C. Lele and J.B. Nganou, *MV-algebras derived from ideals in BL-algebras*, Fuzzy Sets and Systems **218** (2013) 103–113.
- [7] P. Hájek, *Metamathematics of Fuzzy Logic*, Trends in Logic **4** (Kluwer Academic Publishers, 1998), ISBN:9781402003707.
- [8] A. Paad, *Integral ideals and maximal ideals in BL-algebras*, An.Univ. Craiova Ser. Mat. Inform. **43** (2016) 231–242.
- [9] A. Paad, *n-Fold integral ideals and n-fold Boolean ideals in BL-algebras*, Afr. Mat. **28** (2017) 971–984.
- [10] A. Paad and R.A. Borzooei, *Generalization of integral filters in BL-algebras and n-fold integral BL-algebras*, Afr. Mat. **26** (2015) 1299–1311.
- [11] Y. Yang and X. Xin, *On characterization of BL-algebras via implicative ideals*, Italian J. Pure and Appl. Math. **37** (2017) 493–506.
- [12] E. Turunen, *Boolean deductive systems of BL-algebras*, Arch. Math. Logic. **40** (2001) 467–473.

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