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# FOLDING THEORY OF IMPLICATIVE AND OBSTINATE IDEALS IN BL-ALGEBRAS

Akbar Paad

*Department of Mathematics*
*University of Bojnord, Bojnord, Iran*

**e-mail:** akbar.paad@gmail.com

## 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, *Pseduo 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.