

## HYPER *BCI*-ALGEBRAS

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### Abstract

We introduce the concept of a hyper *BCI*-algebra which is a generalization of a *BCI*-algebra, and investigate some related properties. Moreover we introduce a hyper *BCI*-ideal, weak hyper *BCI*-ideal, strong hyper *BCI*-ideal and reflexive hyper *BCI*-ideal in hyper *BCI*-algebras, and give some relations among these hyper *BCI*-ideals. Finally we discuss the relations between hyper *BCI*-algebras and hyper groups, and between hyper *BCI*-algebras and hyper  $H_v$ -groups.

**Keywords:** hyper *BCI*-algebra, hyper group, hyper  $H_v$ -group.

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### REFERENCES

- [1] P. Corsini, *Prolegomena of hypergroup theory*, Aviani Editore 1993.
- [2] K. Iséki and S. Tanaka, *Ideal theory of BCK-algebras*, *Math. Japon.* **21** (1976), 351–366.
- [3] K. Iséki and S. Tanaka, *An introduction to the theory of BCK-algebras*, *Math. Japon.* (1) **23** (1978), 1–26.

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- [4] Y.B. Jun and X.L. Xin, *Scalar elements and hyperatoms of hyper BCK-algebras*, *Scientiae Mathematicae* (3) **2** (1999), 303–309.
- [5] Y.B. Jun and X.L. Xin, *Positive implicative hyper BCK-algebras*, *Scientiae Mathematicae Japonicae Online* **5** (2001), 67–76.
- [6] Y.B. Jun, X.L. Xin, E.H. Roh and M.M. Zahedi, *Strong hyper BCK-ideals of hyper BCK-algebras*, *Math. Japon.* (3) **51** (2000), 493–498.
- [7] Y.B. Jun, M.M. Zahedi, X.L. Xin and R.A. Borzoei, *On hyper BCK-algebras*, *Italian J. Pure and Appl. Math.* **8** (2000), 127–136.
- [8] F. Marty, *Sur une generalization de la notion de groupe*, 8th Congress Math. Scandinaves, Stockholm (1934), 45–49.
- [9] J. Meng and Y.B. Jun, *BCK-algebras*, Kyungmoonsa, Seoul, Korea 1994.
- [10] M.M. Zahedi and A. Hasankhani, *F-polygroups (I)*, *J. Fuzzy Math.* **3** (1996), 533–548.
- [11] T. Vougiouklis, *A new class of hyperstructure*, *J. Comb. Inf. Syst. Sciences.*

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