Generalized Bol loops under a variant of universal elasticity property

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Abstract: In this study, universality of $\alpha$-elasticity properties is studied for Generalized Bol loops. The universal conditions and the newly introduced $\alpha$-alternative laws are used to prove the equivalence of the $\alpha$-alternative laws and the left and right inverse laws. It is established that in right inverse property generalized Bol loops with universal $\alpha$-elasticity property the left and middle nucleus coincide contrary to the norms in the theory of right inverse loops where the right and middle nucleus coincide. It is also established in this chapter that for an IP generalized Bol loops to be associative, it must be commutative and the square of the image of $y$ must be in the right nucleus. An analogue, term middle generalized Bol loops, of middle Bol loops also emerges as consequence of generalized Bol loops with universal $\alpha$-elasticity property. The results of this study have been able to, partly, answer the question (Is there a finite, universally flexible loop that is not middle Bol?) posed by Michael Kinyon at LOOPS ’03, Prague 2003, in the generalized Bol context. Consequently, we suggest that the search for a finite, universally flexible loop that is not middle Bol should be intensified within loops with appropriate universal law of elasticity.

Keywords: Generalized Bol loops • middle generalized Bol identity • $\alpha$-elasticity property • $\alpha$-alternative property

References


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