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A Correspondence Between Commutative Rings and Jordan Loops

Abstract:
We show that there is a one-to-one correspondence (up to isomorphism) between commutative rings with unity and metabelian commutative loops belonging to a particular finitely axiomatizable class. Based on this correspondence, it is proved that the sets of identically valid formulas and of finitely refutable formulas of a class of finite nonassociative commutative loops (and of many of its other subclasses) are recursively inseparable. It is also stated that nonassociative commutative free automorphic loops of any nilpotency class have an undecidable elementary theory.