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A correspondence between commutative rings and Jordan loops. (English. Russian original) [Zbl 1454.20122] Algebra Logic 58, No. 6, 494-513 (2020); translation from Algebra Logika 58, No. 6, 741-768 (2019).

Summary: 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.

MSC:
20N05 Loops, quasigroups
13L05 Applications of logic to commutative algebra

Keywords:
commutative ring with unity; metabelian commutative loop; finitely axiomatizable class; undecidability of elementary theory; recursively inseparable sets

Full Text: DOI

References:

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