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The adjunction of a zero to an ordered groupoid-semigroup. (English. Russian original)

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Summary: For an ordered groupoid S without zero, we denote by S^0 the ordered groupoid arising from S by the adjunction of a zero element. The adjunction of a zero to an ordered groupoid is unique up to isomorphism. In this paper we prove that an ordered groupoid S is isomorphic to an ordered groupoid T if and only if the ordered groupoids S^0 and T^0 arising from S, T by the adjunction of a zero to S and T , are isomorphic (in symbols $S \cong T$ if and only if $S^0 \cong T^0$). Furthermore, we characterize the 0-simple ordered semigroups S for which there exists an ordered semigroup T such that $S \cong T^0$. The characterization is by means of left (resp. right) divisors of zero and the nilpotent elements. Finally we show that while adjunction of a zero to an ordered groupoid is unique up to isomorphism, the adjunction of a generalized zero to an ordered groupoid up to isomorphism is not unique.

MSC:

06F05 Ordered semigroups and monoids

20N02 Sets with a single binary operation (groupoids)

Keywords:

adjunction of zero; ordered groupoid; ordered semigroup; divisors of zero; nilpotent elements