

Universal objects in category of Clifford topological inverse semigroups

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Abstract

Universal objects in various categories are very important in mathematics. An object of some category is called *universal* if each object of this category is isomorphic to a subobject of the universal object.

The class of Clifford topological inverse semigroups includes the classes of topological semilattices and of topological groups. We combine the universality theorems for semilattices and groups and construct universal objects in various categories of Clifford topological inverse semigroups and their continuous homomorphisms.

We study algebraic and topological properties of subsemigroups of the hyperspace $\exp(G)$ (non-empty compact subsets of a topological group G endowed with the Vietoris topology and the natural semigroup operation) and of the convolution semigroups of probability measures on a topological groups. We show that for a compact Clifford topological semigroup S embeds into the convolution semigroup $P(G)$ over some topological group G if and only if S embeds into the semigroup $\exp(G)$ of compact subsets of G if and only if S is an inverse semigroup and has zero-dimensional maximal semilattice.

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