

# EPIMORPHISMS IN CERTAIN VARIETIES OF PARTIALLY ORDERED SEMIGROUPS

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A partially ordered semigroup (briefly posemigroup) is a semigroup  $S$  endowed with a partial order  $\leq$  that is compatible with the binary operation (i.e. for all  $s_1, s_2, t_1, t_2 \in S$ ,  $(s_1 \leq t_1, s_2 \leq t_2)$  implies  $s_1 s_2 \leq t_1 t_2$ ). A posemigroup homomorphism  $f : S \rightarrow T$  is a monotone semigroup homomorphism (i.e. for all  $s_1, s_2 \in S$ ,  $f(s_1 s_2) = f(s_1) f(s_2)$  and  $s_1 \leq s_2$  in  $S$  implies  $f(s_1) \leq f(s_2)$  in  $T$ ). A class of posemigroups is called a variety if it is closed under taking products, subposemigroups and homomorphic images. Every variety of posemigroups gives rise to a category in a natural way. One can easily observe that  $f : S \rightarrow T$  is necessarily an epimorphism in the category of all posemigroups if it is such in the category of all semigroups (where in the latter case we simply disregard the orders). We show that the converse of this statement, which may not be true in general, holds in certain varieties of posemigroups (equivalently semigroups).

## REFERENCES

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