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A note on semi-pseudoorders in semigroups. (English) Zbl 1041.06006
Lobachevskii J. Math. 13, 51-55 (2003).

In a previous paper [ibid. 11, 19–21 (2002; Zbl 1015.06016)] the authors defined a semi-pseudoorder of a semigroup S as a reflexive and transitive relation σ on S which is compatible with multiplication on both sides. The relation $\bar{\sigma} = \sigma \cap \sigma^{-1}$ is a congruence on S such that $S/\bar{\sigma}$ is a partially ordered semigroup with respect to: $a\bar{\sigma} \sqsubseteq b\bar{\sigma}$ iff $a\sigma b$. In the paper under review the converse is shown: If ρ is any congruence on a semigroup S such that with respect to some partial order \preceq , $(S/\rho, *, \preceq)$ is a partially ordered semigroup, then there exists a semi-pseudoorder σ on S with $\rho = \bar{\sigma}$ and $\preceq = \sqsubseteq$. Hence, in this way, for any semigroup S the homomorphic images which are partially ordered semigroups are obtained. It should be noted that the partial order on the factor semigroup of S does not depend on a partial order given on S . (Caution: there are several misprints).

Reviewer: [H. Mitsch \(Wien\)](#)

MSC:

[06F05](#) Ordered semigroups and monoids
[20M10](#) General structure theory for semigroups

Keywords:

[pseudoorder](#); [pseudocongruence](#); [semi-pseudoorder](#); [partially ordered semigroup](#)

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