Correction

In order that, under the hypotheses of Theorem 1, the main Theorem 2 be true, Theorem 1 must be formulated as follows:

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Abstract

Full Text

Correction

The following addition must be made to my article (I. S. Ponizovskii, "On homomorphisms of commutative semigroups"), published in *DAN*, vol. 135, no. 5, 1960.

In order that, under the hypotheses of Theorem 1, the main Theorem 2 be true, Theorem 1 must be formulated as follows:

Let $\mathfrak{A}$ be a commutative semigroup with a finite number of idempotents, $\mathfrak{A}^2 = \mathfrak{A}$, and let $\mathfrak{A}$ possess a principal decreasing ideal series of length $\mu \leqslant \omega$. Then $\mathfrak{A}$ possesses a finite ideal series $A = [\mathfrak{A}_\alpha]$ such that: a) all members of A are ideals of $\mathfrak{A}$; b) each factor $\mathfrak{A}_\alpha$ of the series A contains an ideal $\mathfrak{B}_\alpha$ that is a quasi-null semigroup, and moreover $\mathfrak{G}_\alpha = \mathfrak{A}_\alpha \setminus \mathfrak{B}_\alpha$ is a group; c) the identity of $\mathfrak{G}_\alpha$ is an identity of $\mathfrak{A}_\alpha$.

Without the requirement that the number of idempotents be finite, Theorem 2 is, generally speaking, not true, as may be seen from the following example. Let $\mathfrak{A}$ consist of a zero 0 and a countable set of idempotents e_k $(k = 1, 2, ...)$, multiplied according to the rule: if $k \leqslant m$, then $e_k e_m = e_m e_k = e_m$. Then $\mathfrak{A}$ is a commutative semigroup, $\mathfrak{A}^2 = \mathfrak{A}$, and $\mathfrak{A}$ possesses a principal decreasing ideal series $A' = [\mathfrak{A}'_n]$, where $\mathfrak{A}'_n$ consists of the zero and the idempotents e_k for $k \geqslant n$. As the series A one may simply take the series A'. Let $\mathfrak{B}$ be the semigroup consisting of a zero θ and an identity ε. Put

$$\varphi e_k = \varepsilon \ (k = 1, 2, ...), \qquad \varphi 0 = \theta.$$

It is easy to see that φ is a homomorphism of $\mathfrak{A}$. However, in this case the homomorphisms φ_n (defined by formula (2) of the article) will be zero. Therefore their l.c.m. $\varphi_n (1 \leqslant n < \omega)$ will also be zero, whence $\varphi \neq$ l.c.m. $\varphi_n (1 \leqslant n < \omega)$, and Theorem 2 is not true in the present case.

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Note: Figure translations are in progress. See original paper for figures.