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Corrigendum to "Forms of $\varpi-$continuous functions between bitopological spaces"

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Abstract

We offer some corrections to the paper *"Forms of $\varpi-$continuous functions between bitopological spaces"* [Int. J. Nonlinear Anal. Appl. 13 (1) (2022), 2219-2225].

1 Definition 2.1 in [1]

Looking at the proofs of various results in [1] and checking the validity of results in [1], it is observed that Definition 2.1 and associated results in [1] are not correctly stated, so these need to be corrected. We retain the notation of [1].

1.1 Changing the Definition 2.1

If we change the Definition 2.1 in [1] in the following way, the original results in [1] are valid.

Definition 1.1. Let $(\mathcal{X},\ \mathcal{T}_1,\ \mathcal{T}_2)$ and $(\mathcal{Y},\ \mathcal{F}_1,\ \mathcal{F}_2)$ be two bitopological spaces. A function $f\colon (\mathcal{X},\ \mathcal{T}_1,\ \mathcal{T}_2) \to (\mathcal{Y},\ \mathcal{F}_1,\ \mathcal{F}_2)$ is called pairwise $\varpi-$strongly (resp., pairwise $\varpi-$closure, pairwise $\varpi-$weakly) continuous if $f\colon (\mathcal{X},\ \mathcal{T}_1) \to (\mathcal{Y},\ \mathcal{F}_1)$ is $\varpi-$strongly (resp., $\varpi-$closure, $\varpi-$weakly) continuous and $f\colon (\mathcal{X},\ \mathcal{T}_2) \to (\mathcal{Y},\ \mathcal{F}_2)$ is $\varpi-$strongly (resp., $\varpi-$closure, $\varpi-$weakly) continuous.

However, the correct form of Definition 2.2 should be as follows:

Definition 1.2. If $(x_\alpha)_{\alpha\in\Lambda}$ is a net in a space $\mathcal{X}$, then (x_α) is said to be $\varpi-$convergent to a point $x \in \mathcal{X}$, denoted by $x_\alpha \xrightarrow{\varpi} x$, if for each neighborhood $\mathcal{A}$ of x, there is some $\alpha_0 \in \Lambda$ such that $x_\alpha \in Cl^{\varpi}(\mathcal{A})$ for all $\alpha \geq \alpha_0$. This is equivalent to say that if it is eventually in every $\varpi-$closure nbd of x.

1.2 Retaining the Definition 2.1

If we retain the Definition 2.1 in [1], the correct form of Theorem 2.3, 2.4 and 2.5 respectively in [1] should be as follows:

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Theorem 1.3. For a function $f\colon (\mathcal{X},\ \mathcal{T}_1,\ \mathcal{T}_2) \to (\mathcal{Y},\ \mathcal{F}_1,\ \mathcal{F}_2)$ between two bitopological spaces, the following are equivalent:

1. f is pairwise $\varpi-$strongly continuous;
2. The inverse image of every $\mathcal{F}_1-$closed set is $\mathcal{T}_1 - \varpi-$closed or the inverse image of every $\mathcal{F}_2-$closed set is $\mathcal{T}_2 - \varpi-$closed;
3. The inverse image of every $\mathcal{F}_1-$open set is $\mathcal{T}_1-\varpi-$open or the inverse image of every $\mathcal{F}_2-$open set is $\mathcal{T}_2-\varpi-$open.

Theorem 1.4. For a function $f\colon (\mathcal{X},\ \mathcal{T}_1,\ \mathcal{T}_2) \to (\mathcal{Y},\ \mathcal{F}_1,\ \mathcal{F}_2)$ between two bitopological spaces, the following are equivalent:

1. f is pairwise $\varpi-$closure continuous;
2. The inverse image of every $\mathcal{F}_1 - \varpi-$closed set is $\mathcal{T}_1 - \varpi-$closed or the inverse image of every $\mathcal{F}_2 - \varpi-$closed set is $\mathcal{T}_2 - \varpi-$closed;
3. The inverse image of every $\mathcal{F}_1 - \varpi-$open set is $\mathcal{T}_1 - \varpi-$open or the inverse image of every $\mathcal{F}_2 - \varpi-$open set is $\mathcal{T}_2 - \varpi-$open.

Theorem 1.5. For a function $f\colon (\mathcal{X},\ \mathcal{T}_1,\ \mathcal{T}_2) \to (\mathcal{Y},\ \mathcal{F}_1,\ \mathcal{F}_2)$ between two bitopological spaces, the following are equivalent:

1. f is pairwise $\varpi-$weakly continuous;
2. The inverse image of every $\mathcal{F}_1 - \varpi-$closed set is $\mathcal{T}_1-$closed or the inverse image of every $\mathcal{F}_2 - \varpi-$closed set is $\mathcal{T}_2-$closed;
3. The inverse image of every $\mathcal{F}_1 - \varpi-$open set is $\mathcal{T}_1-$open or the inverse image of every $\mathcal{F}_2 - \varpi-$open set is $\mathcal{T}_2-$open.

References

[1] A.N. Atewi, B.S. Naseer, S.J. Ali and M.A. Harhoosh, *Forms of $\varpi-$continuous functions between bitopological spaces*, Int. J. Nonlinear Anal. Appl. **13** (2022), no. 1, 2219–2225.