Novi Sad J. Math.
Vol. 47, No. 1, 2017, 189-189

CORRIGENDUM TO "ON THE PRODUCT OF SMOOTH FUZZY TOPOLOGICAL SPACES"

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Definition 3.2 of [1] as well as the statements of Theorem 3.8 and 3.9 are not correct. The correct definitions and statements are:

Definition 3.2. Let A be a fuzzy subset of a set X. A collection $\{A_\lambda\}_{\lambda\in\Lambda}$ of non-zero fuzzy subsets of A is called an inner cover for A if $\bigvee_{\lambda\in\Lambda} A_\lambda = A$.

Theorem 3.8. Let $(\mu, \mathcal{T})$ be a smooth fuzzy topological space and let $\mathcal{B} : \Im_\mu \to [0,1]$ be a function satisfying

i. $\mathcal{T}(A) \geq \mathcal{B}(A)$ for all $A \in \Im_\mu$

ii. if $A \in \Im_\mu$, $x \in X$, $\delta > 0$ and $\epsilon > 0$, then there exists $B \in \Im_\mu$ such that $B(x) \geq A(x) - \delta$, $B \leq A$ and $\mathcal{B}(B) \geq \mathcal{T}(A) - \epsilon$.

Then $\mathcal{B}$ is a basis for the smooth fuzzy topology $\mathcal{T}$ on μ.

Theorem 3.9. If $\mathcal{B}$ is a basis for the smooth fuzzy topological space $(\mu, \mathcal{T})$, then

i. $\mathcal{T}(A) \geq \mathcal{B}(A)$ for all $A \in \Im_\mu$.

ii. if $x \in X$, $A \in \Im_\mu$, $\delta > 0$ and $\epsilon > 0$, then there exists $B \in \Im_\mu$ such that $B(x) \geq A(x) - \delta$, $B \leq A$ and $\mathcal{B}(B) \geq \mathcal{T}(A) - \epsilon$.

Accordingly, the last statement of the second paragraph in the proof of Theorem 3.5, has to be replaced by the following.

"Since $A \wedge B \neq 0_X$ there is an $x \in X$ such that $A(x) \wedge B(x) \neq 0$. Then by the definition of inner cover, for any $\delta > 0$, there exist A_{λ_0} and B_{γ_0} in the corresponding inner covers such that $A_{\lambda_0}(x) > A(x) - \delta$ and $B_{\gamma_0}(x) > B(x) - \delta$. This implies that $A_{\lambda_0}(x) \wedge B_{\gamma_0}(x) > (A(x) \wedge B(x)) - \delta$; by choosing a very small $\delta > 0$, we see that $A_{\lambda_0}(x) \wedge B_{\gamma_0}(x) > 0$, as $A \wedge B \neq 0_X$. Hence, $(\lambda_0, \gamma_0) \in \Lambda$. Thus we have $\Lambda \neq \emptyset$."

Furthermore the proofs of Theorems 3.8, 3.9 and 4.3 have to be modified with a very similar argument using a $\delta > 0$.

References

[1] M. Shakthiganesan and R. Vembu, *On Product of Smooth Fuzzy Topological Spaces* Novi Sad J. Math. 46(2) (2016), 13-31.
`https://www.dmi.uns.ac.rs/nsjom/Papers/46_2/NSJOM_46_2_013_031.pdf`

Received by the editors February 18, 2017

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