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CORRECTION: RESULTS ON PRIME NEAR-RINGS WITH (σ, τ)-DERIVATION

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Öznur GÖLBAŞI and Neşet AYDIN

In the proof of Theorem 7 on pp.7 in [1], Brauer's Trick method is used wrongly, in which case the corrected should read as follows:

Theorem 7. *Let N be a $2-$torsion free prime left near-ring, D be a nonzero (σ, τ)-derivation of N such that $\sigma D = D\sigma$, $\tau D = D\tau$. If $[D(N), D(N)]_{\sigma,\tau} = 0$ then N is commutative ring.*

Proof. It is correctly shown in [1, Theorem 6] that $D^2(x) = 0$ or $D(x) \in Z$, for all $x \in N$. Choosing x such that $D(x) \in Z$. If $D(x) = 0$ then $D^2(x) = 0$, so we get $D(x) \in Z\backslash\{0\}$. It follows $D(y+z)\sigma(D(x+x)) = \tau(D(x+x))D(y+z)$, for all $y, z \in N$, by the hypothesis. That is $(D(y) + D(z))\sigma(D(x)) + (D(y)+D(z))\sigma(D(x)) = \tau(D(x+x))D(y)+\tau(D(x+x))D(z)$. Using $D(x) \in Z$ and the hypothesis, we can arrive at $\sigma(D(x))D(y) + \sigma(D(x))D(z) + \sigma(D(x))D(y)+\sigma(D(x))D(z) = D(y)\sigma(D(x+x))+D(z)\sigma(D(x+x))$. Computing this equation, we have $\sigma(D(x))D(z, y) = 0$, for all $y, z \in N$. Since $D(x) \in Z\backslash\{0\}$ and N is prime near-ring, we conclude that $D(z, y) = 0$, for all $y, z \in N$. For any $w \in N$, we can write $0 = D(wz, wy) = D(w(z, y))$, and so we obtain $D(w)\sigma(z, y) = 0$, for all $y, z, w \in N$. By [1, Lemma 3 (i)], $(z, y) = 0$, for all $y, z \in N$. Thus $(N, +)$ is abelian.

Now, we have $[D(D(x)y), D(z)]_{\sigma,\tau} = 0$, for all $y, z \in N$. We calculate this equation using [1, Lemma 2], $D(x) \in Z$ and $(N, +)$ is abelian, we have

$$\tau(D(x))[D(y), D(z)]_{\sigma,\tau} = \tau(D(z))D^2(x)\sigma(y) - D^2(x)\sigma(y)\sigma(D(z)).$$

Since the left term of this equation is zero by the hypothesis and σ is an automorphism of N, we conclude that $\tau(D(z))D^2(x)y = D^2(x)y\sigma(D(z))$, for all $y, z \in N$. Replacing y by yt, $t \in N$ in this equation and using this, we obtain that $D^2(x)y[\sigma(D(z)), t] = 0$, for all $y, z, t \in N$. By the primeness of N, we infer $D^2(x) = 0$ or $D(N) \subset Z$, for all $x \in N$. In the first case, $D^2 = 0$, and so $D = 0$ by [1, Lemma 4], contrary to our original hypothesis. Hence $D^2(x) = 0$ does not in fact occur. Thus we get $D(N) \subset Z$, then N is commutative ring by [1, Theorem 2]. This completes the proof. ☐

The above proof, stemming from the authors' oversight in editing and proofreading, is immaterial for the other results, proofs and discussions of the article.

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References

[1] Gölbaşı, Ö., Aydın, N., Results on Prime Near-Rings with $(\sigma, \tau)-$Derivation, Math. J. of Okayama Univ., **46**, 1-7, (2004).

Cumhuriyet University,
Faculty of Arts and Science,
Department of Mathematics,
Sivas - TURKEY

e-mail address: ogolbasi@cumhuriyet.edu.tr
URL: `http://www.cumhuriyet.edu.tr`

Çanakkale 18 Mart University,
Faculty of Arts and Science,
Department of Mathematics,
Çanakkale - TURKEY

e-mail address: neseta@comu.edu.tr
URL: `http://www.comu.edu.tr`

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