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CORRIGENDUM TO "ON NEAR PSEUDO-VALUATION RINGS AND THEIR EXTENSIONS"

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All rings are associative with identity and all modules are unitary. Throughout this corrigendum R denotes a commutative ring with identity $1 \neq 0$. The field of rational numbers is denoted by $\mathbb{Q}$ unless otherwise stated. Let R be a ring. The set of prime ideals of R is denoted by $Spec(R)$, the set of associated prime ideals of R (viewed as a right R-module) is denoted by $Ass(R_R)$ and the set of minimal prime ideals of R is denoted by $Min.Spec(R)$. $Assas(U)$ denotes the assassinator of a uniform R-module U and for any subset J of a right R-module M, the annihilator of J is denoted by $Ann(J)$. The set of regular elements of R is denoted by $C(0)$ and for any ideal I of R, the set of elements regular modulo I is denoted by $C(I)$.

Recall that a prime ideal P of R is said to be strongly prime if and only if for any $a, b \in R$ either $aP \subseteq bR$ or $bR \subseteq aP$. The set of strongly prime ideals of a ring R is denoted by $S.Spec(R)$.

Let now σ be an automorphism of R and δ a σ-derivation of R. Consider the Ore extension $O(R) = R[x; \sigma, \delta] = \{\sum_{i=0}^{n} x^i a_i,\ a_i \in R\}$ in which multiplication is subject to the relation $ax = x\sigma(a) + \delta(a)$ for all $a \in R$.

To prove Theorem 2.5 and Corollary 2.6 of [2], the author uses Proposition 2.5 of [1].

Theorem 1. (Theorem 2.5 of [2]) *Let R be a Noetherian near pseudo-valuation ring which is also an algebra over $\mathbb{Q}$. Let σ be an automorphism of R such that R is a $\sigma(*)$-ring and δ a σ-derivation of R. Then $O(R)$ is a Noetherian near pseudo-valuation ring.*

Corollary 2. (Corollary 2.6 of [2]) *Let R be a Noetherian near pseudo-valuation ring which is also an algebra over $\mathbb{Q}$, σ and δ as usual such that $\sigma(U) = U$ for all $U \in Min.Spec(R)$. Then $O(R)$ is a Noetherian near pseudo-valuation ring.*

Proposition 3. (Proposition 2.5 of [1]) *Let R be a ring, σ an automorphism of R and δ a σ-derivation of R. Then:*

(1) *For any strongly prime ideal P of R with $\delta(P) \subseteq P$ and $\sigma(P) = P$, $O(P)$ is a strongly prime ideal of $O(R)$.*
(2) *For any strongly prime ideal U of $O(R)$, $U \cap R$ is a strongly prime ideal of R.*

Proposition 3 above is false. This mistake was found by Prof. Feran Cedo and communicated to Prof. Dolors Herbera (Editor IEJA).

We note that the hypothesis (used above) that any $U \in S.Spec(R)$ with $\sigma(U) = U$ and $\delta(U) \subseteq U$ implies that $O(U) \in S.Spec(O(R))$ is too restrictive. This leads to the fact that $U = 0$ [Proof: This proof is done and forwarded by Prof. Dolors Herbera to the author : if $U \neq 0$ and $O(U) \in S.Spec(O(R))$ then either $O(U) \subseteq xO(R)$ or $xO(R) \subseteq O(U)$. The first case is not possible because $0 \neq U \subseteq O(U) \cap R \subseteq xO(R) \cap R = 0$ which is a contradiction. Therefore, $xO(R) \subseteq O(U)$ but then $1 \in U$ so that $U = R$ which is impossible with a prime ideal].

Example 4. Let $R = \mathbb{Z}_{(p)}$. This is in fact a discrete valuation domain, and therefore, its maximal ideal $P = pR$ is strongly prime. But $pR[x]$ is not strongly prime in $R[x]$ because it is not comparable with $xR[x]$ (so the condition of being strongly prime in $R[x]$ fails for $a = 1$ and $b = x$).

Consequent upon this, Proposition 2.4, Theorem 2.5 and Corollary 2.6 of [2] must be deleted from the paper.

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References

[1] V. K. Bhat, *Polynomial rings over pseudovaluation rings*, Int. J. Math. Math. Sci. 2007 (2007), Art. ID 20138.

[2] V. K. Bhat, *On near-pseudo-valuation rings and their extensions*, Int. Electron. J. Algebra, 5 (2009), 70-77.

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