Novi Sad J. Math.
Vol. 46, No. 1, 2016, 227-227

CORRIGENDUM AND ADDENDUM TO "CHAOS EXPANSION METHODS IN MALLIAVIN CALCULUS: A SURVEY OF RECENT RESULTS"

Tijana Levajković[1], Stevan Pilipović[2] and Dora Seleši[3]

The estimate $\alpha! \leq (2\mathbb{N})^\alpha$ on page 51 in [1], as well as the inclusions $(S)_{-1,-(p-1)} \subseteq (S)_{0,-p}$ and $(S)_{0,p} \subseteq (S)_{1,p}$, $p \in \mathbb{N}$, are not correct. The correct inclusions are: $(S)_{1,p} \subseteq (S)_{0,p}$ and $(S)_{0,-p} \subseteq (S)_{-1,-p}$, $p \in \mathbb{N}_0$.

Consequently, the statement and proof of Theorem 6.5 will hold only for the Hida spaces but not for the Kondratiev spaces. For this purpose we note that we may define $Dom_{0,-p}(\mathbb{D}) = \{u \in X \otimes (S)_{0,-p} : \sum_{\alpha\in\mathcal{I}} \|u_\alpha\|_X^2 |\alpha|\alpha!(2\mathbb{N})^{-p\alpha} < \infty\}$, and by the proof of Theorem 2.19 [1], $\mathbb{D} : Dom_{0,-p}(\mathbb{D}) \to X \otimes S_{-l}(\mathbb{R}) \otimes (S)_{0,-p}$, $l > p+1$. Similarly, we define $Dom_{0,-l,-q}(\delta) = \{u \in X \otimes S_{-l}(\mathbb{R}) \otimes (S)_{0,-q} : \sum_{\alpha\in\mathcal{I}} \sum_{k=1}^{\infty} \|u_{\alpha,k}\|_X^2 \alpha!(\alpha_k+1)(2k)^{-l}(2\mathbb{N})^{-q\alpha} < \infty\}$ and by the proof of Theorem 2.22 [1], $\delta : Dom_{0,-l,-q}(\delta) \to X \otimes (S)_{0,-q}$, $q > l+1$, $l \in \mathbb{N}$.

The statement and proof of Theorem 6.5 on page 86 now have to be modified as follows.

Theorem 6.5. *(Weak duality) Let $F \in Dom_{0,-p}(\mathbb{D})$ and $u \in Dom_{0,-q}(\mathbb{D})$ for $p, q \in \mathbb{N}$. For any $\varphi \in S_{-n}(\mathbb{R})$, $n < q-1$, it holds that*

$$\ll \langle \mathbb{D}F, \varphi\rangle_{-r}, u \gg_{-r} = \ll F, \delta(\varphi u) \gg_{-r},$$

for $r > \max\{q, p+1\}$.

Proof. Let $F = \sum_{\alpha\in\mathcal{I}} f_\alpha H_\alpha \in Dom_{0,-p}(\mathbb{D})$, $u = \sum_{\alpha\in\mathcal{I}} u_\alpha H_\alpha \in Dom_{0,-q}(\mathbb{D})$ and $\varphi = \sum_{k\in\mathbb{N}} \varphi_k \xi_k \in S_{-n}(\mathbb{R})$. Then, for $k > p+1$, $\mathbb{D}F \in X \otimes S_{-k}(\mathbb{R}) \otimes (S)_{0,-p} \subseteq X \otimes S_{-r}(\mathbb{R}) \otimes (S)_{0,-r}$ if $r > p+1$. Also, one can easily check that $\varphi u \in Dom_{0,-n,-q}(\delta)$ and since $q > n+1$, this implies that $\delta(\varphi u) \in X \otimes (S)_{0,-q} \subseteq X \otimes (S)_{0,-r}$, for $r \geq q$. Therefore we let $r > \max\{p+1, q\}$. The rest of the proof is conducted as in [1]. □

References

[1] Levajković, T., Pilipović, S.,Seleši, D., Chaos expansion methods in Malliavin calculus: A survey of recent results. Novi Sad J. Math. 45(1) (2015), 45–103. http://www.dmi.uns.ac.rs/nsjom/Papers/45_1/NSJOM_45_1_045_103.pdf

Received by the editors May 7, 2016

[1] Department of Mathematics, Faculty of Mathematics, Computer Science and Physics, University of Innsbruck, Austria, email: tijana.levajkovic@uibk.ac.at

[2] Department of Mathematics and Informatics, Faculty of Sciences, University of Novi Sad email: stevan.pilipovic@dmi.uns.ac.rs

[3] Department of Mathematics and Informatics, Faculty of Sciences, University of Novi Sad, e-mail: dora@dmi.uns.ac.rs