Math. Z. 166, 299–300 (1979)

Mathematische Zeitschrift

Corrigendum to

Spaces of Vector-Valued Measurable Functions

Ep de Jonge

Department of Mathematics California Institute of Technology,
Pasadena, CA 91125, USA

I am greatly indebted to A.V.Buhvalov, who pointed out a mistake in several theorems of [1]. To be precise, in [1] I stated that if $f_1, f_2, \ldots$ is a sequence in $L_\rho(E)$ such that $f_n \downarrow 0$, then $f_n(x) \downarrow 0$ (in E) μ-a.e. has to hold. This is in general false. Accordingly the Theorems 3.1, 4.3, 6.1, 7.4 and the Lemmas 4.2, 7.1. 7.2 and 7.3 have to be adjusted.

Definitions. (i) Let $(L_\rho(E))_d^*$ denote the set of all $\varphi \in (L_\rho(E))^*$ such that $f_n \in L_\rho(E)^+$, $f_n(x) \downarrow 0$ μ-a.e. on Δ implies $\varphi(f_n) \downarrow 0$.

(ii) Let $L_\rho^\alpha(E)$ denote the set of all $f \in L_\rho(E)$ with the property that $|f| \geqq g_n$, $g_n(x) \downarrow 0$ μ-a.e. on Δ implies $\rho(g_n) \downarrow 0$.

(iii) $L_\rho(E)$ is called a *weak semi-M-space* if $f_1, f_2 \in L_\rho(E)^+$, $\rho(f_1) = \rho(f_2) = 1$ and $f_1 \vee f_2 \geqq g_n$, $g_n(x) \downarrow 0$ μ-a.e. on Δ implies $\lim \rho(g_n) \leqq 1$.

It is not hard to see that $(L_\rho(E))_d^*$ is a band in $(L_\rho(E))^*$ containing $(L_\rho(E))_c^*$. Moreover, if $(L_\rho(E))_{ds}^*$ is the disjoint complement of $(L_\rho(E))_d^*$ in $(L_\rho(E))^*$, then we have

$$^0\{(L_\rho(E))_{ds}^*\} = L_\rho^\alpha(E).$$

Also we have that $L_\rho(E)$ is a weak semi-M-space if and only if $(L_\rho(E))_{ds}^*$ is an L-space. The proofs of all above statements are exactly the same as their analogues for the order convergence case. Finally observe that if $L_\rho^\alpha(E) = L_\rho(E)$ or if $L_\rho(E)$ is an M-space, then $L_\rho(E)$ is a weak semi-M-space. Now, a careful rereading of the proofs in [1] shows that we actually have proved the following results:

3,1 (i)	$L'_\rho(E_c^*) \subset (L_\rho(E))_d^*$.
4.2	Read $G \in (L_\rho(E))_d^*$ instead of $G \in (L_\rho(E))_c^*$.
4.3	If E_c^* has the R-N property, then $(L_\rho(E))_d^* \cong L'_\rho(E_c^*)$.
6.1	$L_\rho^\alpha(E) = L_\rho(E)$ if and only if $L_\rho^a = L$ and $E^a = E$.
7.1, 7.2, 7.3	Read $L_\rho(E)$ is a weak semi-M-space.
7.4	For (a) read $L_\rho(E)$ is a weak semi-M-space.

0025-5874/79/0166/0299/$01.00

Finally we observe that statement (ii) of Theorem 3.1 remains a conjecture, as the measurability of the functions f_n employed in the proof is not shown.

Reference

1. Jonge, E. de: Spaces of vector-valued measurable functions. Math. Z. **149**, 97–107 (1976)

Received December 20, 1978