Positivity (2019) 23:759–760
https://doi.org/10.1007/s11117-019-00677-1

Positivity

CORRECTION

Correction to: Unbounded order continuous operators on Riesz spaces

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Published online: 7 May 2019

Correction to: Positivity (2018) 22:837–843 https://doi.org/10.1007/s11117-017-0548-z

In page 838, line 7, we should write: For sequences in a Dedekind complete Riesz space E, $x_n \xrightarrow{o} x$ if and only if there exists a sequence (y_n) such that $y_n \downarrow 0$ and $|x_n - x| \leq y_n$ for each $n \in \mathbb{N}$ (see [1, Page 17–18]).

Example 3 is false. Consider the sequence (f_n) where $f_n(0) = 1$, $f_n(\frac{1}{n}) = 0 = f(1)$, and f is linear on the intervals $[0, \frac{1}{n}]$ and $[\frac{1}{n}, 1]$. Then, $f_n \downarrow 0$, hence $f_n \xrightarrow{o} 0$. Yet it is not weakly null: Take the functional φ defined by $\varphi(f) = f(0)$. Then, $\varphi(f_n) = 1$ for every n. Since the sequence is order bounded, it is uo-null but not uaw-null. Example 4 needs to be restated as:

Example 4 In $L_1(\mu)$, uo-convergence of sequences is equivalent to a.e. convergence which is not topological.

Theorem 2 must be omitted. As a consequence of theorem 1, immediately after it we give the following corollary and a remark.

Corollary *If E is a Riesz space, then $L_{uo}(E, \mathbb{R})$ and $L_{u\sigma o}(E, \mathbb{R})$ are both ideals of $E^\sim$.*

Proof Note that if $|g| \leq |f|$ holds in $E^\sim$ with $f \in L_{uo}(E, \mathbb{R})$, then from Theorem 1 it follows that $g \in L_{uo}(E, \mathbb{R})$. That is $L_{uo}(E, \mathbb{R})$ is an ideal of $E^\sim$. □

Remark Let E be a Banach lattice. By a similar way, one can show that $L_{buo}(E, \mathbb{R})$ and $L_{bu\sigma o}(E, \mathbb{R})$ are both ideals of $E^\sim$. But $L_{buo}(E, \mathbb{R})$ is not a band of $E^\sim$. For

The original article can be found online at https://doi.org/10.1007/s11117-017-0548-z.

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example, take $E = \ell_1$. Then, $E^\sim = \ell_\infty$ and $L_{buo}(E, \mathbb{R}) = c_0$ which is not a band of ℓ_∞ (see, [2, Example 2.4]).

References

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