Analysis in Banach spaces - Volume I

Tuomas Hytönen, Jan van Neerven, Mark Veraar, Lutz Weis

(17.08.2017)

Errata and corrigenda

page xix, line 2: delete 'of'.

page 7, It was kindly pointed out to us by Ryan Kurniawan that the proof of Lemma 1.1.12 contains a gap. The proof depends on the assumption that if an index set I is uncountable, then the cardinality of the set 2^I is strictly greater than that of $2^{|\mathbb{N}|}$. In ZFC this is true if one assumes the Continuum Hypothesis, but false if one assumes both Martin's Axiom and the negation of the Continuum Hypothesis (the latter was kindly pointed out by Klaas Pieter Hart).

page 18, in Remark 1.2.8, the text 'but it cannot be approximated by simple functions having the properties stated above (such an approximation would involve at most countably many points of T)' should be deleted.

page 76, lines –7 and –8: Replace "as a bounded operator the spaces $L^p(X_{\mathbb{C}})$, has the same norm as $T \otimes I_X$" by "as a bounded operator on the spaces $L^p(X_{\mathbb{C}})$, has the same norm as $T \otimes I_X$ on $L^p(X)$".

page 81, paragraph starting with "Analogous": Replace "discrete" by "periodic" (twice).

page 84, in the formulation of lemma 2.2.2: A mild *a priori* growth condition on F is missing which is needed to ensure the asserted decay of F, which should read $\lim_{|v|\to\infty} \|F_\varepsilon(u+iv)\| = 0$ uniformly with respect to $u \in [0,1]$. Indeed it is well known that the three lines lemma is wrong without such a growth condition: the function $\exp(\exp(\pi i(z-\frac{1}{2})))$ is bounded on the lines $\Re z = 0$ and $\Re z = 1$, but unbounded on the line $\Re z = \frac{1}{2}$. In the applications of the lemma, the functions under consideration are always bounded.

page 110, line 7: Replace "operator on norm at most one" by "operator of norm at most one".

page 125: we learnt that part (2) of Proposition 2.5.7 has been obtained independently, with a different proof, by Marcel Kreuter as part of his 2015 M.Sc. thesis submitted to the University of Ulm. This proof will appear in a forthcoming paper by Wolfgang Arendt and Marcel Kreuter in Studia Math. (arXiv:1611.06161). This paper contains a wealth of interesting material on vector-valued Sobolev spaces not covered in our monograph.

page 152, line 7: Replace "Turing" by "Turning"

page 162, line 9: replace 'gives' by given'.

page 164, line 12: replace '$L^\infty(S;L^2(T))$' by '$L^p(S;L^2(T))$'. The correct norm in the same line reads $(\frac{1}{2}(\frac{1}{8})^{p/2}+\frac{1}{2}(\frac{5}{8})^{p/2})^{1/p}$.

page 166, line -16: replace 'Such a martingales is called if' by 'Such a martingale is called L^p*-bounded* if'.

page 171, Gilles Pisier has kindly pointed out that the result quoted as Theorem 2.7.7 is wrong as stated. The arXiv preprint from which it was taken has been withdrawn.

page 214, Theorem 3.4.1 (Gundy decomposition): Replace the equation

$$g_{-\infty}=f_{-\infty},\qquad b_{-\infty}=h_{-\infty}=0$$

by

$$g_{-\infty}=f_{-\infty}\mathbf{1}_{\{\|f_{-\infty}\|<\lambda\}},\quad b_{-\infty}=f_{-\infty}\mathbf{1}_{\{\|f_{-\infty}\|\geq\lambda\}},\quad h_{-\infty}=0.$$

(The proof is unchanged; one can see that the given proof actually proves the latter statement, not the first.)

page 260, paragraph starting with "In $\mathbb{R}^d$": Replace "$k=1,\dots,N$" by "$k=1,\dots,N_d$" and "$\ell(Q)\leq C_d\ell(D)$" by "$\ell(D)\leq C_d\ell(Q)$".

page 305, display in the middle of the page: Replace θ by ϑ (twice).

page 307, line –4 of the proof of Theorem 4.3.3: Replace "ℓ_N^∞ into $L^q(\Omega\times[0,1);X)$ that satisfies $\theta\leq\|J\|\leq\beta_{p,X}^+$" by "$\ell_N^\infty$ into $L^p(\Omega\times[0,1);X)$ that satisfies $\|J\|\|J^{-1}\|\leq\frac{1}{\theta}\beta_{p,X}^+$" and "$\beta_{p,\ell_N^\infty}^+\leq\frac{1}{\theta}\beta_{p,X}^+$" by "$\beta_{p,\ell_N^\infty}^+\leq\|J\|\|J^{-1}\|\beta_{p,L^p(X)}^+\leq\frac{1}{\theta}(\beta_{p,X}^+)^2$".

page 345, line -10: replace the second 'dg_n' by 'df_n'.

page 407, line 10: replace "last admissible" by "least admissible"

page 526, line –2 of the proof of Proposition B.1.17: Replace "$\Re\langle x^*,x^*\rangle$" by "$\Re\langle x,x^*\rangle$".

Tuomas Hytönen, Jan van Neerven, Mark Veraar, Lutz Weis

(17.08.2017)