Errata Sheet for 2nd Edition

p. 12, 11 & 13 dn: Change $\mathcal{U}(\psi; C)$ to $\mathcal{U}(\varphi; C)$ and $\mathcal{L}(\psi; C)$ to $\mathcal{L}(\varphi; C)$.

p. 39, 4up: Change “$\Gamma_n \nearrow \Gamma$” to “$\Gamma_n \nearrow \Gamma$ or $\Gamma_n \searrow \Gamma$”.

p. 50, proof of Theorem 2.2.11: Change to:

Proof. The existence of $\lambda_{\mathbb{R}^N}$ as well as its regularity are immediate consequences of Theorem 2.2.8. To prove the uniqueness assertion, suppose that $\nu$ is a Borel measure on $\mathbb{R}^N$ for which $\nu(Q) = \text{vol}(Q)$ for all cubes $Q$. Given a cube $Q$, one can find cubes such that $Q_n \nearrow Q$ and $\text{vol}(Q_n) \nearrow \text{vol}(Q)$, which means that

$$\nu(Q) = \text{vol}(Q) = \lim_{n \to \infty} \text{vol}(Q_n) = \lim_{n \to \infty} \nu(Q_n) \leq \nu(\hat{Q}).$$

Hence, $\nu(\partial Q) = 0$ for all cubes $Q$. Now let $G$ be an open set, and choose $\{Q_n : n \geq 1\}$ to be a non-overlapping, exact cover of $G$ by cubes. Then, because $Q_m \cap Q_n \subseteq \partial Q_m \cup \partial Q_n$ and therefore $\nu(Q_m \cap Q_n) = 0$ for $m \neq n$,

$$\nu(G) = \sum_{n=1}^{\infty} \nu(Q_n) = \lambda_{\mathbb{R}^N}(G),$$

and so $\nu = \lambda_{\mathbb{R}^N}$ on $\mathcal{B}(\mathbb{R}^N)$. By the argument at the end of the proof of Theorem 2.2.8, this proves that $\nu = \lambda_{\mathbb{R}^N}$ on $\mathcal{B}_{\mathbb{R}^N}$. \qed

p. 109, 12up: Change to

(a) $1 \in \mathcal{L}$ and $\alpha f + \beta g \in \mathcal{L}$ if $f, g \in \mathcal{L}$ and $\alpha, \beta \in [0, \infty)$.

p. 110, 10 & 11dn: Change “bounded” to “non-negative”

p. 144, 1 & 2up: Replace $(1 - t)^{n-1}$ by $(1 - \frac{t}{\tau})^{n-1}$ in the integrands.

p. 150, 9up: Change $\hat{U} \times (-\rho, \rho)$ to $\hat{U} = U \times (-\rho, \rho)$.

p. 151, 2dn: Delete

$$\left( n(\Psi(u)), \Psi(u(t)) - \Psi(u) \right)_{\mathbb{R}^N}$$

from this line.

p. 154, 3dn: Change $-i|\dot{z}|$ to $-i|\gamma|^{-1}|\dot{z}|$.

p. 160, 9-10dn: Replace these lines by:

Depending on whether $f$ is non-increasing or non-decreasing, it is bounded above on $[c - n, \infty)$ or $(-\infty, c + n]$, and so, in either case, the preceding implies that $f \circ \varphi_n \in L^1(\mu; \mathbb{R})$ and

$$\int f \circ \varphi_n \, d\mu \geq f \left( \int \varphi_n \, d\mu \right).$$
In addition, \( f \circ \varphi_n \leq f \circ \varphi_{n+1} \leq f \circ \varphi \), and therefore \( (f \circ \varphi)^- \leq (f \circ \varphi_0)^- \in L^1(\mu; \mathbb{R}) \) and

\[
\int f \circ \varphi \, d\mu \geq \lim_{n \to \infty} \int f \circ \varphi_n \, d\mu \geq \lim_{n \to \infty} f \left( \int f \circ \varphi_n \, d\mu \right) = f \left( \int \varphi \, d\mu \right).
\]

p. 221, 2up & p. 222 1dn: Replace \( \mu_n \) by \( 4\mu_n \).

p. 222, 10up: Replace \( \mu_{j+2n} \) by \( \mu_{j+2n+1} \).

p. 244, proof of Theorem 8.1.3: Change the last paragraph of the proof to

To prove the \(|\mu|\)-a.e. uniqueness of \( A \), suppose that \( \mu(\Gamma) = |\mu|(\Gamma \cap B) - |\mu|(\Gamma \cap B^c) \) for all \( \Gamma \), and conclude that \( |\mu|(\Gamma \cap B) = |\mu|(\Gamma \cap A) \) for all \( \Gamma \) and therefore that \( 1_A = 1_B \) \(|\mu|\)-a.e.

p. 247, 15up: Change “measure space” to “finite measure space”