Errata of the book *Intermediate Spectral Theory and Quantum Dynamics, Progress in Mathematical Physics 54, Birkhäuser, Basel, 2008, by César R. de Oliveira.*

Corrections ordered by page numbers

- page 15, line -10. The left hand side of the polarization identity should read: $\langle \eta, \xi \rangle$

- page 143. The top of page should read:

  2. For bounded operators A, B and all $n \in \mathbb{N}$, one has (expand the r.h.s.)

  $$A^n - B^n = \sum_{j=0}^{n-1} A^j \, (A - B) \, B^{n-1-j},$$

  and the choices $A = e^{-itT/n} e^{-itS/n}$, $B = e^{-it(T+S)/n}$ imply that, for any $n \in \mathbb{N}$,

  $$\left(e^{-itT/n} e^{-itS/n}\right)^n - \left(e^{-it(T+S)/n}\right)^n = \cdots$$

- page 150, line +1. The form b_1 should be supposed to be closed in the KLMN Theorem.

- page 173. The proof of Theorem 7.1.13 needs to be corrected, since it was implicitly assumed that rng $\rho_1|_{\mathrm{dom}\ T_{\hat{\mathcal{U}}}}$ is also dense in $\mathbf{h}$. In fact, the very definition of boundary triples (Definition 7.1.11) should include the assumption that the map

  $$\begin{pmatrix} \rho_1 \\ \rho_2 \end{pmatrix} : \mathrm{dom}\ T^* \to \mathbf{h} \times \mathbf{h}$$

  is onto (instead of the ranges of both ρ_1 and ρ_2 be dense in $\mathbf{h}$). The proof of Theorem 7.1.13 then goes as follows.

  Given a unitary $\hat{\mathcal{U}}$, as in the original proof $T_{\hat{\mathcal{U}}}$ is hermitian and it will be argued that $T_{\hat{\mathcal{U}}}^* \subset T_{\hat{\mathcal{U}}}$, so that $T_{\hat{\mathcal{U}}}$ is self-adjoint. Let $\eta \in \mathrm{dom}\ T_{\hat{\mathcal{U}}}^*$.

The relation $0 = \langle \rho_1(\eta), \rho_1(\xi)\rangle - \langle \rho_2(\eta), \rho_2(\xi)\rangle$, for all $\xi \in \mathrm{dom}\, T_{\hat{\mathcal{U}}}$ (see page 174), implies the orthogonality

$$0 = \left\langle \begin{pmatrix} \rho_1(\xi) \\ \rho_2(\xi) \end{pmatrix}, \begin{pmatrix} \rho_1(\eta) \\ -\rho_2(\eta) \end{pmatrix} \right\rangle,$$

and since the graph $\mathcal{G}(\hat{\mathcal{U}})$ is a (closed) subspace of $\mathbf{h} \times \mathbf{h}$, the set

$$\left\{ \begin{pmatrix} \rho_1(\xi) \\ \rho_2(\xi) \end{pmatrix} : \xi \in \mathrm{dom}\, T_{\hat{\mathcal{U}}} \right\} = \left\{ \begin{pmatrix} \rho_1(\xi) \\ \rho_2(\xi) \end{pmatrix} : \xi \in \mathrm{dom}\, T^*, \rho_2(\xi) = \hat{\mathcal{U}}\rho_1(\xi) \right\}$$

coincides with the graph of $\hat{\mathcal{U}}$. By Lemma 2.1.15 and the above orthogonality, $\begin{pmatrix} \rho_2(\eta) \\ \rho_1(\eta) \end{pmatrix} \in \mathcal{G}(\hat{\mathcal{U}}^*)$, that is, $\hat{\mathcal{U}}^* \rho_2(\eta) = \rho_1(\eta)$, and so $\rho_2(\eta) = \hat{\mathcal{U}}\rho_1(\eta)$. Therefore, $\eta \in \mathrm{dom}\, T_{\hat{\mathcal{U}}}$.

This modification of the definition of boundary triple also affects some arguments in page 198, since the ranges of both $\rho_1(\psi)$ and $\rho_2(\psi)$ are not the whole space $\mathbf{h} = \mathrm{L}^2(S)$. So the conclusion that H_U is self-adjoint holds true under the following additional assumptions: (i) $-1 \in \rho(U)$ and (ii) if $\psi \in \mathcal{H}^1(S)$, then $(\mathbf{1} + U)^{-1}(\mathbf{1} - U)\psi \in \mathcal{H}^{1/2}(S)$ (see Theorem 4.5 of J. Berhndt, M. Langer, V. Lotoreichik, Spectral estimats for resolvent differences of self-adjoint elliptic operators. Preprint: arXiv:1012.4596).

Remark: In the particular case $U = e^{iu(\varphi)}$ (see item 4 in page 199), to guarantee that H_U is self-adjoint it is sufficient to impose that (j) $-1 \notin \mathrm{essrng}\, e^{iu(\varphi)}$ and (jj) $\nabla e^{iu(\varphi)} \in \mathrm{L}^\infty(S)$, which ensure (i) and (ii) above, respectively.

(I warmly thank Jussi Behrndt and Vladimir Lotoreichik, from Austria, for sharing their expertise with me and this important correction.)

- page 227, line +10. The central part of the equation should read

$$\mathbf{1} - \frac{1}{2}\left(W_t(x) + W_t(x)^2\right)$$

- page 248, lines +3 and +4. It should be $S = S_1 + iS_2$ with $S_2 = \frac{i}{2}(S^* - S)$.

- page 264, line +10. The set Λ_ε should read $\Lambda_\varepsilon = (a+\varepsilon, b-\varepsilon)$.
- page 265, line +17. It should be $\|f_\varepsilon(T_n)\| < 1$ instead of $\|f_\varepsilon\|_\infty < 1$.
- page 348, last equation in the proof of Proposition 12.6.1. It should be

$$Y = \bigcap_{j,n\in\mathbb{N}} \bigcup_{t\in\mathbb{N}} \Big\{ T \in X : \langle p^T_{\psi_j} \rangle(t) < \frac{1}{n} \Big\}.$$

(I thank Jonás Arista, from Mexico, for this correction)