Errata for *Effectuses in Categorical Quantum Foundations* (Kenta Cho, 2019)

Last updated: 6th March 2020

Page 104: Definition 4.4.1: The definition of $\mathcal{L}(K)$ is incorrect when $K = \varnothing$. The following quick fix will work.

$$\mathcal{L}(K) = \begin{cases} (M \times K)/{\sim} & \text{if } K \neq \varnothing \\ \{(0, *)\} & \text{if } K = \varnothing\,. \end{cases}$$

Page 109: Replace the proof of Lemma 4.4.11 with the following one.

Proof. Under the given condition, it follows that $x = 0 \iff y = 0$, via Lemma 4.3.3. Hence we assume that $x \neq 0$ and $y \neq 0$. Let

$$s \coloneqq |r \cdot x| = |r \cdot y|\,.$$

Then $r \cdot |x| = s = r \cdot |y|$, so that $|x| = r \backslash s = |y|$. There are $\overline{x}, \overline{y} \in \mathrm{B}(X)$ such that $x = |x| \cdot \overline{x}$ and $y = |y| \cdot \overline{y}$. Now

$$\begin{aligned} s \cdot \overline{x} &= r \cdot (|x| \cdot \overline{x}) \\ &= r \cdot x = r \cdot y \\ &= r \cdot (|y| \cdot \overline{y}) \\ &= s \cdot \overline{y}\,. \end{aligned}$$

By Lemma 4.3.3, s is nonzero, and hence $s \cdot \overline{x} = s \cdot \overline{y}$ implies $\overline{x} = \overline{y}$ by the uniqueness of normalization. Therefore $x = |x| \cdot \overline{x} = |y| \cdot \overline{y} = y$. ∎

Page 218: In Definition 7.1.21(G4), "$p = q$" should be "$q = r$".

Page 236: In Definition 7.2.19, "A effect module" should be "An effect module".

Page 244: In Theorem 7.2.40(ii), "$\mathscr{V}^*$" should be "$\mathscr{A}^*$".