

1 Errata, Saturday 19th March, 2022

This document contains errata and corrections for the book. It is being updated on a regular basis. I apologize for the inconveniences my errors and omissions may have caused. They are, course, my sole responsibility.

Readers are encouraged to submit their findings to the email address noted in the open-source repository (qcc4cp@gmail.com). Many thanks in advance for all findings and corrections!

Page 5

This is embarrassing, but Equation (1.6) was mistyped. Fortunately, it is being correctly *used* in the rest of the text. The book states, incorrectly:

$$(A \otimes B)(a \otimes b) = (A \otimes a)(B \otimes b)$$

The correct form is, of course:

$$(A \otimes B)(a \otimes b) = (Aa) \otimes (Bb)$$

We use this property to apply a gate to individual qubits in a combined state. For example, to apply an X-gate to the second qubit only in a 2-qubit state, we use:

$$(I \otimes X)(\psi \otimes \phi) = (I\psi) \otimes (X\phi)$$

Page 30

The mistake from page 5 is repeated on page 30, where a copy of Equation (1.6) is presented.

Page 310

In section 8.4.8 of the book, that gate (u_3) has an error in the top right element:

$$u_3(\theta, \phi, \lambda) = \begin{bmatrix} \cos(\theta/2) & -i \sin(\theta/2) \\ e^{i\phi} \sin(\theta/2) & e^{i(\lambda+\phi)} \cos(\theta/2) \end{bmatrix}$$

The correct form would be:

$$u_3(\theta, \phi, \lambda) = \begin{bmatrix} \cos(\theta/2) & -e^{-i\lambda} \sin(\theta/2) \\ e^{i\phi} \sin(\theta/2) & e^{i(\lambda+\phi)} \cos(\theta/2) \end{bmatrix}$$