Quantum Optics – Taming the Quantum
Erratum

(Updated 3/29/2022)

This short document lists known misprints in the first edition of Quantum Optics – Taming the Quantum (Springer Verlag, 2021). I would appreciate it very much if you would be kind enough to inform me of additional misprints that you may have found. The best way is to simply send them to my email address: pierre.meystre@optics.arizona.edu.

Thanks in advance!

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CHAPTER 1

In Eqs. (1.71) Ω_1 should be Ω_r.

Eq. (1.94) should read

$$\mathcal{L} = \frac{1}{2}\sum_\alpha m_\alpha \dot{\mathbf{r}}_\alpha^2 + \frac{\epsilon_0}{2}\int \mathrm{d}^3 r\left[\mathbf{E}(\mathbf{r},t)^2 - c^2\mathbf{B}(\mathbf{r},t)^2\right] + \int \mathrm{d}^3 r\left\{\mathbf{J}(\mathbf{r},t)\cdot\mathbf{A}(\mathbf{r},t) - \rho(\mathbf{r},t)U(\mathbf{r},t)\right\}\ . \tag{1}$$

Eq. (1.110) should read

$$H = \sum_\alpha \int d^3 r \frac{1}{2m_\alpha}[\mathbf{p}_\alpha - q_\alpha \mathbf{A}(\mathbf{r}_\alpha,t)]^2\delta(\mathbf{r}-\mathbf{r}_\alpha) + \epsilon_0\int d^3 r[\mathbf{E}^2(\mathbf{r},t) + c^2\mathbf{B}^2(\mathbf{r},t)]\,. \tag{2}$$

CHAPTER 2

In Eq. (2.155) $\hat{S}_2(\lambda)$ should read $\hat{S}_2(\zeta)$.
Figure 2.10: The horizontal input field should be labeled E_b.

CHAPTER 5

Eq. (5.123) should read

$$\sum_\psi P_\psi\left[|\dot\psi\rangle\langle\psi| + |\psi\rangle\langle\dot\psi|\right] = -\frac{\mathrm{i}}{\hbar}\left(\hat{H}_{\mathrm{eff}}|\psi\rangle\langle\psi| - |\psi\rangle\langle\psi|\hat{H}^\dagger_{\mathrm{eff}}\right) + \sum_i \hat{C}_i|\psi\rangle\langle\psi|\hat{C}_i^\dagger\ . \tag{3}$$

Eq. (5.159) should read

$$\frac{\mathrm{d}\hat{a}}{\mathrm{d}t} = [\mathrm{i}(\omega-\Omega) - \kappa/2]\hat{a} + \sqrt{\kappa}\,\hat{a}_{\mathrm{in}}(t)\,. \tag{4}$$

CHAPTER 6

Page 183, the first and second first lines should read "... the operator $\sum_k p_k|B_k\rangle\langle B_k|$, and hence all $|B_k\rangle\langle B_k|$, must be quantum non-demolition operators..."

CHAPTER 7

Eq. (7.53) should read

$$\phi'(\bar{n}) = \frac{1}{4v} \int \frac{4g^2(x)\mathrm{d}x}{\sqrt{\Delta^2 + 4g^2(\bar{n}+1)}} \,. \tag{5}$$