Known errata for *QMT*:

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Chapter 1

In Eq.(1.70), in the last expression, the symbol x is the position operator and not merely a real number, something that should have been made clear.

In Eq.(1.72) the denominator in the exponent should be $4V_0$ not $2V_0$.

In Eq.(1.73) the single occurrence of x should be x_0.

Five lines before Eq.(1.89), the state $|\psi_n\rangle$ should be replaced ρ_j. Also, five lines below Eq.(1.89), the set of states $\{|\psi_n\rangle\}$ should be replaced by $\{\rho_j\}$.

Two lines above Eq.(1.90) the probability $P(n)$ should be replaced by $P(j)$.

Chapter 3

Eq.(3.34) should be

$$\langle\hat{\psi}(t+dt)|\hat{\psi}(t+dt)\rangle = 1 + 8k\langle X\rangle^2 dt + \sqrt{8\eta k}\langle X\rangle\, dW,$$

Eqs.(3.41), (3.46), and (3.49) are missing the comma after the first appearance of "X". Thus Eq.(3.49) should be (for example)

$$d\rho = -\,k[X,[X,\rho]]\,dt + \sqrt{2\eta k}(X\rho + \rho X - 2\langle X\rangle\rho)\,dW,$$

Eq.(3.51) should be

$$\begin{aligned} d\rho &= -\,k_1[X,[X,\rho]]\,dt + \sqrt{2k_1}(X\rho + \rho X - 2\langle X\rangle\rho)\,dW_1 \\ &\quad -\,k_2[Y,[Y,\rho]]\,dt + \sqrt{2k_2}(Y\rho + \rho Y - 2\langle Y\rangle\rho)\,dW_2, \end{aligned}$$

Eqs.(3.54) and (3.55) should be

$$\begin{aligned} d\rho_1 &= -\,k_1[X,[X,\rho_1]]\,dt - k_2[Y,[Y,\rho_2]]\,dt + \sqrt{2k_1}(X\rho_1 + \rho_1 X - 2\langle X\rangle\rho_1)\,dV_1, \\ d\rho_2 &= -\,k_1[X,[X,\rho_1]]\,dt - k_2[Y,[Y,\rho_2]]\,dt + \sqrt{2k_2}(Y\rho_2 + \rho_2 Y - 2\langle Y\rangle\rho_2)\,dV_2, \end{aligned}$$

Eq.(3.81): The left-hand side should be $\langle r(t)r(t+\tau)\rangle$, or equivalently $\langle r(t+\tau)r(t)\rangle$

Eq.(3.138): The bottom line of the right hand side should be $N!$.

Page 140: Just after Eq.(3.193), "though" should be "through".

Eq.(3.236) should be

$$S(\omega) \quad = \quad (A^* J + 1)(N + 1/2)(A J^* + 1)^{\mathrm{t}} + (A J + 1)(N + 1/2)(A^* J^* + 1)^{\mathrm{t}}$$

Eq.(3.246): on the right-hand-side the fields X, P, and Y should have the subscript "in":

$$X(\omega) = \frac{\sqrt{\gamma}(\gamma/2 + i\omega)\, X_{\mathrm{in}}(\omega) - \omega_0[\sqrt{\gamma}\, P_{\mathrm{in}}(\omega) + \sqrt{8\tilde{k}}\, Y_{\mathrm{in}}(\omega)]}{(\gamma/2 + i\omega)^2 + \omega_0^2} \tag{1}$$

Chapter 4

Pages 195/196: In the paragraph with the heading "The transition rates and the density of states: additional details" there is a claim that is incorrect. The first part of this paragraph points out that under a coupling to a bath with an exponentially increasing density of states, then in view of Fermi's golden rule the resulting master equation will have different rates if the system starts in different states. (The steady-state of the master equation is independent of the initial system state, but not the evolution that takes one there.) This is at odds with the standard thermal (Markovian Redfield) master equation, derived for example using a bath of harmonic oscillators, which is independent of the initial state of the system. The last part of this paragraph states that this discrepancy between the model based on an exponential density of states and the usual master equation is eliminated when the initial state of the bath is sufficiently broad in energy. **This is incorrect.** An analysis by KJ in late 2015 revealed that the exponential density of states of the bath is not sufficient to explain the emergence of a master equation that is independent of the initial system state. In fact, it is an *additional* property of baths, originating from their many-body structure, that makes the thermal rate equations (the master equation) independent of the initial state of the system. This is now fully elucidated in a paper to appear in J. Phys. A, and that can be downloaded from the arXiv at: https://arxiv.org/abs/1708.06797

Eqs.(4.97) and (4.102): The occurrence of "γ" should be replaced by unity.

Eqs. (4.105) through (4.112): In these equations, γ and μ are included in the definition of the equation to be simulated, so can be kept in. Alternatively, all occurrences of γ and μ and can be replaced by unity, meaning simply that γ is absorbed into L, and μ is absorbed into A.

Chapter 5

Eq.(5.13): db_{in} and $db_{\mathrm{in}}^{\dagger}$ should be ds_{in} and $ds_{\mathrm{in}}^{\dagger}$, respectively.

Eq.(5.150) should be

$$H = \frac{1}{2}\mathbf{v}^{\mathrm{T}}\Sigma^{\mathrm{T}} A\mathbf{v} + \mathbf{v}\Sigma B\mathbf{c},$$

Note also that Σ is a skew-symmetric matrix (not a symplectic matrix as erroneously stated in the text). Σ is also invertible with $\Sigma^{-1} = \Sigma^{\mathrm{T}}$.

Eq.(5.156) should be

$$\frac{d}{dt}C = (\Sigma^{\mathrm{T}}A)C + C(\Sigma^{\mathrm{T}}A)^{\mathrm{T}}.$$

Eq.(5.160) should be

$$\dot{C} \quad = \quad (\Sigma^{\mathrm{T}}A)C + C(\Sigma^{\mathrm{T}}A)^{\mathrm{T}} + \hbar^2 D - 8CM^{\mathrm{T}}\Upsilon MC.$$

Chapter 7

page 354: Table 7.2 should be:

Amplifier parameters	Measurement parameters
P_G (output power including gain G)	$GS + A$
S (signal)	$8V_x(n_T + 1/2)/\gamma$
A (noise added)	$G\left[1/(4\eta k) + (4V_x)^2 k/\gamma^2\right]$

page 361: Eq.(7.92), and the text immediately following it, should be:

$$P(\omega_0) = GS + A = G\left(\frac{8V_x}{\gamma}\right)\left(n_T + \frac{1}{2}\right) + A.$$

So we see that in Eq.(7.88) G is set equal to unity. We can always include a non-unity G merely by multiplying the output power P by G, and this gives us the relationships shown in Table 7.2.