Errata

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$$\hat{\rho}^I(t) = e_{\leftarrow}^{-i\int_0^t \mathfrak{L}_I(\tau)\tau d\tau}\hat{\rho}(0),$$

where $\hat{\rho}(0) = \hat{\rho}^I(0)$ and the $e_{\leftarrow}^{-i\int_0^t \mathfrak{L}_\circ \tau d\tau}$ is the well known

`τ should not be in the integrals`

$$\hat{\rho}^I(t) = e_{\leftarrow}^{-i\int_0^t \mathfrak{L}_I(\tau)d\tau}\hat{\rho}(0),$$

where $\hat{\rho}(0) = \hat{\rho}^I(0)$ and the $e_{\leftarrow}^{-i\int_0^t \mathfrak{L}_\circ d\tau}$ is the well known

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$$\hat{\rho}(t) = 1 - i\int_0^t d\tau Tr_B(\mathfrak{U}_\circ(t-\tau)\mathfrak{L}_I(\tau)\hat{\rho}^g_{eq} - \tag{1}$$

$$-\int_0^t d\tau' \int_0^\tau d\tau \mathfrak{U}_\circ(t-\tau)\mathfrak{L}_I(\tau)\mathfrak{U}_\circ(\tau-\tau')\mathfrak{L}_I(\tau')\hat{\rho}^g_{eq} + \ldots =$$

$$= 1 + \frac{i}{\hbar}\int_0^t d\tau \mathfrak{U}_\circ(t-\tau)[\hat{\mu}, \hat{\rho}^g_{eq}]E(\tau) -$$

$$-\frac{1}{\hbar^2}\int_0^t d\tau' \int_0^\tau d\tau \mathfrak{U}_\circ(t-\tau)[\hat{\mu}, \mathfrak{U}_\circ(\tau-\tau')[\hat{\mu}, \hat{\rho}^g_{eq}]]E(\tau')E(\tau) + \ldots.$$

To simplify the treatment, let as assume a special form of $E(t)$ (in the so-called impulse limit), namely

$$E(t) = E_0\delta(t+\epsilon), \tag{2}$$

where E_0 is a constant, $\delta(t)$ is the Dirac delta function, and ϵ is some infinitesimal positive number. Then we can rewrite our equation (in the limiting case $\epsilon \to 0$) as

$$\hat{\rho}(t) = 1 + \frac{i}{\hbar}\mathfrak{U}_\circ(t)[\hat{\mu}, \hat{\rho}^g_{eq}]E_0 - \tag{3}$$

$$-\frac{1}{\hbar^2}\mathfrak{U}_\circ(t)[\hat{\mu}, [\hat{\mu}, \hat{\rho}^g_{eq}]]E_0^2 + \ldots. \tag{4}$$

`The first term in the series should be` $\hat{\rho}^g_{eq} = \hat{\rho}(0)$, $\delta(t+\epsilon)$ `should be` $\delta(t-\epsilon)$

We obtain up to the first two orders in $\mathfrak{L}_I^I(\tau)$

$$\hat{\rho}(t) = \hat{\rho}^g_{eq} - i\int_0^t d\tau Tr_B(\mathfrak{U}_\circ(t-\tau)\mathfrak{L}_I(\tau)\hat{\rho}^g_{eq} - \tag{5}$$

$$-\int_0^t d\tau' \int_0^\tau d\tau \mathfrak{U}_\circ(t-\tau)\mathfrak{L}_I(\tau)\mathfrak{U}_\circ(\tau-\tau')\mathfrak{L}_I(\tau')\hat{\rho}^g_{eq} + \ldots =$$

$$= \hat{\rho}^g_{eq} + \frac{i}{\hbar}\int_0^t d\tau \mathfrak{U}_\circ(t-\tau)[\hat{\mu}, \hat{\rho}^g_{eq}]E(\tau) -$$

$$-\frac{1}{\hbar^2}\int_0^t d\tau' \int_0^\tau d\tau \mathfrak{U}_o(t-\tau)[\hat{\mu},\mathfrak{U}_o(\tau-\tau')[\hat{\mu},\hat{\rho}^g_{eq}]]E(\tau')E(\tau)+\ldots.$$

To simplify the treatment, let as assume a special form of $E(t)$ (in the so-called impulse limit), namely

$$E(t) = E_0\delta(t-\epsilon), \tag{6}$$

where E_0 is a constant, $\delta(t)$ is the Dirac delta function, and ϵ is some infinitesimal positive number. Then we can rewrite our equation (in the limiting case $\epsilon \to 0$) as

$$\hat{\rho}(t) = \hat{\rho}^g_{eq} + \frac{i}{\hbar}\mathfrak{U}_o(t)[\hat{\mu},\hat{\rho}^g_{eq}]E_0 - \tag{7}$$

$$-\frac{1}{\hbar^2}\mathfrak{U}_o(t)[\hat{\mu},[\hat{\mu},\hat{\rho}^g_{eq}]]E_0^2+\ldots. \tag{8}$$

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$$\mathfrak{P}\hat{\rho} = Tr_B(\hat{\rho})\hat{W}.$$

`This equation should be numbered.`

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where the $\bar{n}$ is defined by the equation

$$\bar{n} = \sum_n \langle n|\hat{W}_{eq}|n\rangle n = \frac{1}{e^{\frac{\hbar\omega}{k_B T}}-1}. \tag{9}$$

ω `should be` ω_g

where the $\bar{n}$ is defined by the equation

$$\bar{n} = \sum_n \langle n|\hat{W}_{eq}|n\rangle n = \frac{1}{e^{\frac{\hbar\omega_g}{k_B T}}-1}. \tag{10}$$

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you can see the the dependence of $\sigma_{ge}(t)$ on another

`Doubled the.`

you can see the dependence of $\sigma_{ge}(t)$ on another

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By the same argumentation as in the preceding case we could prove that the relation $\mathfrak{P}\mathfrak{L}_\mathrm{I}(\mathrm{t}_1)\mathfrak{L}_\mathrm{I}(\mathrm{t}_2)\ldots\mathfrak{L}_\mathrm{I}(\mathrm{t}_{2n+1})\mathfrak{P}\hat{\rho}=0$ (valid also for nonzero temperatures).

`Equation is wrong, only` $\mathfrak{P}\mathfrak{L}_\mathrm{I}(\mathrm{t})\mathfrak{P}\hat{\rho}=0$ `is true in this case.`

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The time range of this figure is 10 times larger then in Fig.

`No, 3 times larger.`

The time range of this figure is 3 times larger then in Fig.

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The parameters of the model system were chosen as $\hbar\omega_g \approx 166.78\ cm^{-1}$, $\hbar\omega_e = 1,1\hbar\omega_g$ $x_0 = 1,2$, $\lambda = \sqrt{\frac{\omega_e}{\omega_g}} \approx 1,05$ for the temperature $T \approx 239$ K.

`The parameter` x_0 `was set equal to` 0.

The parameters of the model system were chosen as $\hbar\omega_g \approx 166.78\ cm^{-1}$, $\hbar\omega_e = 1,1\hbar\omega_g$ $x_0 = 0$, $\lambda = \sqrt{\frac{\omega_e}{\omega_g}} \approx 1,05$ for the temperature $T \approx 239$ K.