# Erratum: Unified model for the study of diffusion localization and dissipation [Phys. Rev. E 55, 1422 (1997)]

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Section II B: (Text correction) ... The joint distribution of the bath oscillators with respect to $\omega_\alpha$ and $x_\alpha$ is assumed to be factorized. Consequently, we can write

$$\frac{\pi}{2}\sum_\alpha \frac{c_\alpha^2}{m_\alpha\omega_\alpha}\delta(\omega-\omega_\alpha)\,\delta(x-x_\alpha)=J(\omega). \tag{2.11}$$

The bath is characterized by the spectral function $J(\omega)$. If we consider a partition of the bath oscillators into subsets of oscillators whose positions $x_\alpha$ are the same, then locally, within each subset, the $\omega_\alpha$ will have the same distribution. The interaction is characterized by well defined spatial autocorrelation function $w(x-x')$, namely,

$$w(r)=\int_{-\infty}^{\infty}u(r-x')u(x')dx'=\frac{1}{\text{density}}\sum_\alpha u_\alpha(R+r)u_\alpha(R), \tag{2.12}$$

where ''density'' refers to the uniform spatial distribution $\Sigma\,\delta(x-x_\alpha)$. The scattering potential $u(x)$ will be normalized so that $w''(0)=-1$, the normalization constant being absorbed in the coefficients $c_\alpha$. Disregarding for a moment the dynamical nature of the bath, thus considering again the case of either ''noisy'' or ''quenched'' environment, one obtains $\langle\mathcal{U}(x,t)\mathcal{U}(x',t')\rangle=\Sigma_\alpha c_\alpha^2\langle Q_\alpha(t)Q_\alpha(t')\rangle u_\alpha(x)u_\alpha(x')$, which upon recalling previous definitions, leads to Eq. (2.4) with $\phi(t-t')=\text{density}\times\Sigma_\alpha c_\alpha^2\langle Q_\alpha(t)Q_\alpha(t')\rangle$. Thus, if the dynamical nature of the bath is ignored, the problem reduces to solving the Langevin equation with the appropriate $w(x-x')$ and $\phi(t-t')$.

Section VI A: (Corrections). The integrals in the two unnumbered equations following Eq. (6.1) should be multiplied by a (1/density) factor. In the second of these equations, a summation $\Sigma_\alpha$ is missing.

Appendix A: (Remark). The discussion of dephasing in the present paper, and in this appendix in particular, is quite restricted. For a comprehensive picture, see the follow-up studies of Refs. [1–4].

Appendix A: (Corrections). There is a missing factor $k^{d-1}$ in the integrals of Eq. (A4) and of Eq. (A5). A restriction $d\leqslant 2$ is missing in Eq. (A6).

Appendix B: (Text correction) ... Consider a superposition of two Gaussian wave packets... The Wigner function for this preparation is easily computed, and is of the form

$$\rho_{t=0}(R,P)=\frac{1}{2}G(R-R_{01},P-P_0)+\frac{1}{2}G(R-R_{01},P-P_0)+\cos\left(\frac{P-P_0}{\delta P_c}\right)G\left(R-\frac{1}{2}(R_{01}+R_{02}),P-P_0\right).$$

Appendix B: (Text correction) ... For propagation in a noisy nondisordered environment, the interference pattern is smeared on scale $\delta P\sim\nu\cdot t$, due to the diffusive momentum spreading. The smearing factor is $\exp[-\frac{1}{2}(\delta P(t)/\delta P_c)^2]$ leading to an exponential decay $\exp[-(\nu d^2/\hbar^2)t]$ that depends on the separation $d$. On the other hand, for propagation in a noisy disordered environment, using Eq. (7.8), the exponential decay is $\exp[-(\nu\ell^2/\hbar^2)t]$, independent of geometry.

[1] D. Cohen, e-print chao-dyn/9611013 (errata incorporated).
[2] D. Cohen, Phys. Rev. Lett. **78**, 2878 (1997).
[3] D. Cohen, J. Phys. A **31**, 8199 (1998).
[4] D. Cohen and Y. Imry, Phys. Rev. B **59**, 11 143 (1999).

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