Erratum: Weyl-Wigner formalism for rotation-angle and angular-momentum variables in quantum mechanics [Phys. Rev. A 49, 3255 (1994)]

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Some misprints have been found in the above article and are here corrected, the results and findings of the work remaining unchanged.

In Eq. (3.34), the integration limits are obviously wrong, and are to be replaced according to

$$|\langle m|\psi(t)\rangle|^2 = \frac{1}{2}\int_{-\pi}^{+\pi} d\theta\, w_m(\theta,t).$$

In Eq. (4.19), the sum over ν' is actually a sum over ν, hence the new writing:

$$\sum_{m''=-\infty}^{+\infty} \exp\left[-i2\left(m''+\frac{\mu-\mu'}{2}\right)\theta'\right] w_{m+m''+\mu'/2}(\theta+\theta'',t)$$
$$= \frac{\pi}{2}\exp[-i(\mu-\mu')\theta'] \sum_{\nu=-1,+1} \exp\left(-i\frac{\upsilon}{2}\partial_{\theta'}\delta^{w}_{\nu m}\right)\left[\sum_{n=-\infty}^{+\infty}\delta(\theta'-\pi n)+i\frac{\nu}{\pi}\cot(\theta')\right] w_{m+\mu'/2}(\theta+\theta'',t).$$

In Eq. (4.38), a factor 2 is missing in the denominator of the fraction multiplying the integral in the first equality, the correct expression being

$$\langle m|\hat{H}|m'\rangle = -\frac{\omega\gamma}{2\pi}\int_{-\pi}^{+\pi} d\theta \exp[-i(m-m')\theta]\cos(\theta) = -\frac{\omega\gamma}{2}\delta_{|m-m'|,1}.$$

In Eqs. (4.40) and (4.42), the argument in the exponential operator is to be multiplied by a minus sign, so they now read, respectively,

$$\partial_t w_{m+\mu/2}(\theta,t) = -\frac{\omega\gamma}{\hbar}\sum_{\nu=-1,+1}\exp\left(-\frac{1-2\mu}{2}\nu\delta_{\nu m}\right)\left\{\sin\left(\frac{\nu}{2}\delta_{\nu m}\partial_\theta^{\cos}\right)[1-(1-2\mu)\nu S_1^{\cos}]+\nu\cos\left(\frac{\nu}{2}\delta_{\nu m}\partial_\theta^{\cos}\right)C_1^{\cos}\right\}$$
$$\times\cos(\theta) w_{m+(1-\mu)/2}(\theta,t)$$

and

$$\partial_t w_{m+\mu/2}(\theta,t) = -\frac{\omega\gamma}{2\hbar}\sum_{\nu=-1,+1}\exp\left(-\frac{1-2\mu}{2}\nu\delta_{\nu m}\right)$$
$$\times\left\{[2-(1-2\mu)\nu]\sin\left(\frac{\nu}{2}\delta_{\nu m}\partial_\theta^{\cos}\right)\cos(\theta)-\nu\cos\left(\frac{\nu}{2}\delta_{\nu m}\partial_\theta^{\sin}\right)\sin(\theta)\right\} w_{m+(1-\mu)/2}(\theta,t).$$

In Eq. (5.19), the last term has the wrong sign, the equation becoming thus:

$$\langle H\rangle_{m_0} \cong \frac{\omega\hbar}{\pi}\int_0^{\pi} d\theta\left\{m_0\sum_{m=-\infty}^{+\infty}J_{2m}\left[\frac{2\gamma}{\hbar}\cos(\theta)\right]+\sum_{m=-\infty}^{+\infty}mJ_{2m}\left[\frac{2\gamma}{\hbar}\cos(\theta)\right]-\frac{\gamma}{\hbar}\cos(\theta)\sum_{m=-\infty}^{+\infty}J_{2m+1}\left[\frac{2\gamma}{\hbar}\cos(\theta)\right]\right\}.$$

In Eq. (5.44), there is a factor 2 wrong in the arguments of the Bessel functions that compose the sum in the last term, which means the right form is

$$\frac{1}{4}\sum_{\mu=0,1}\sum_{m=-\infty}^{+\infty}\int_{-\pi}^{+\pi} d\theta[w_{m_0,m+\mu/2}(\theta)]^2 \cong \frac{1}{2\pi}+\frac{1}{\pi}J_{2m_0}\left(\frac{2\gamma}{\hbar}\right)+\frac{1}{4\pi}\left[\sum_{m=-\infty}^{+\infty}J_{2m_0-m}\left(\frac{\gamma}{\hbar}\right)J_m\left(\frac{\gamma}{\hbar}\right)\right]^2.$$

Also, when ending the paragraphs just after Eqs. (4.13) and (4.49), "formalsim" is an obvious misprint of "formalism."

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