Wigner functions for time-dependent coupled linear oscillators via linear and quadratic invariant processes

2005 J. Phys. A: Math. Gen. 38 2819

(http://iopscience.iop.org/0305-4470/38/12/C01)

J. Phys. A: Math. Gen. **38** (2005) 2819 doi:10.1088/0305-4470/38/12/C01

Corrigendum

Wigner functions for time-dependent coupled linear oscillators via linear and quadratic invariant processes

M Sebawe Abdalla and P G L Leach 2005 *J. Phys. A: Math. Gen.* **38** 881–894

The authors have discovered errors in equations (4.9), (5.1), (5.4) and (5.7). The correct versions are given below.

Equation (4.9) should be replaced with

$$W_n(\boldsymbol{q},\boldsymbol{p},t) \quad = \frac{(-)^{n_1+n_2}}{\pi^2}\exp\left[-\frac{1}{\hbar}\left(|z_1(t)|^2+|z_2(t)|^2\right)\right]L_{n_1}\left(\frac{2}{\hbar}|z_1(t)|^2\right)L_{n_2}\left(\frac{2}{\hbar}|z_2(t)|^2\right) \tag{4.9}$$

Equation (5.1) should be replaced with

$$\mathcal{R}_{\theta_+,\theta_-}(\boldsymbol{q},\boldsymbol{p},t)=\int_0^\infty\int_0^\infty W_\alpha(\boldsymbol{q},\boldsymbol{p},t)|\alpha_1||\alpha_2|(d|\alpha_1|)(d|\alpha_2|) \tag{5.1}$$

Equation (5.4) should be replaced with

$$\mathrm{erf}\beta_\pm=\sum_{k=0}^{\infty}(-)^k\frac{(\beta_\pm)^{2k+1}}{k!(2k+1)},\qquad \beta_\pm=-\frac{2}{\sqrt{\hbar}}(\mathrm{e}^{\mathrm{i}\theta_\pm}z_\pm^*+\mathrm{e}^{-\mathrm{i}\theta_\pm}z_\pm) \tag{5.4}$$

Equation (5.7) should be replaced with

$$\mathcal{R}_{\mathrm{Re}(\alpha)}(\boldsymbol{q},\boldsymbol{p},t)=\frac{1}{2\pi}\exp\left[-2\left(\left[u_1-\tfrac{1}{4}F_+(\boldsymbol{q},\boldsymbol{p},t)\right]^2+\left[u_2-\tfrac{1}{4}F_-(\boldsymbol{q},\boldsymbol{p},t)\right]^2\right)\right] \tag{5.7}$$

doi:10.1088/0305-4470/38/12/C01