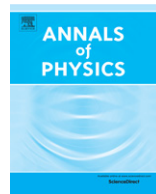




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## Corrigendum

## Corrigendum to “From the Weyl quantization of a particle on the circle to number–phase Wigner functions” [Ann. Physics 351 (2014) 919–934]



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The part of Section 4 which follows Eq. (4.4) i.e. ‘The function  $\varrho_W[\mathcal{K}_S](\Theta, n\hbar)$  given by (4.4) defines the density operator  $\hat{\varrho}$  uniquely. Indeed, one can rewrite (4.4) in the following form ...’ till the end of Section 4 should read:

Eq. (4.4) can be rewritten in the form

$$\varrho_W[\mathcal{K}_S](\Theta, n\hbar) = \frac{1}{2\pi} \sum_{k=-\infty}^{\infty} \left[ \cos[(n-k)\Theta] \text{Re}\langle k|\hat{\varrho}|n\rangle + \sin[(n-k)\Theta] \text{Im}\langle k|\hat{\varrho}|n\rangle \right]. \quad (4.5)$$

From (4.5) we easily get

$$\langle n-k|\hat{\varrho}|n\rangle + \langle n|\hat{\varrho}|n+k\rangle = 2 \int_{-\pi}^{\pi} \varrho_W[\mathcal{K}_S](\Theta, n\hbar) \exp(ik\Theta) d\Theta \quad \text{for } k \neq 0, \quad (4.6a)$$

$$\langle n|\hat{\varrho}|n\rangle = \int_{-\pi}^{\pi} \varrho_W[\mathcal{K}_S](\Theta, n\hbar) d\Theta. \quad (4.6b)$$

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So, in general, the function  $\varrho_W[\mathcal{K}_S](\Theta, n\hbar)$  does not define the state  $\hat{\varrho}$  uniquely. However, if  $\hat{\varrho}$  is of the form

$$\hat{\varrho} = \sum_{j,k=0}^{\infty} \varrho_{jk} |j\rangle \langle k|$$

then it is defined uniquely by the corresponding Wigner function  $\varrho_W[\mathcal{K}_S](\Theta, n\hbar)$  and this is just what is needed to define the number–phase Wigner function in the next section.

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Eq. (5.32) should read:

$$\hat{f} := \frac{1}{2\pi} \sum_{n=0}^{\infty} \int_{-\pi}^{\pi} f(\phi, n) \hat{\varrho}[\mathcal{K}_S](\phi, n) d\phi. \quad (5.32)$$