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Erratum

Erratum to: Nonclassical properties of two families of q-coherent states in the Fock representation space of q-oscillator algebra

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Unfortunately, after publication, we found some misprints in Eur. Phys. J. Plus (2020) **135**: 253. We list them here because their number is not few.

After publication of paper [1], in which signal-to-quantum noise ratios, Mandel parameters and the second-order correlation functions have been investigated, the authors realized that some relations in Eqs. (5a), (5b), (14b), (14c) and (16a)–(16d) needed to be corrected. Their corrected versions are as the following, respectively:

$$\left(q^{\frac{N}{2}}a\right)|z\rangle_I = \frac{z}{\sqrt{1+(1-q)|z|^2}}\,|q^{\frac{1}{2}}z\rangle_I, \tag{5a}$$

$$a|z\rangle_{II} = \frac{z}{\sqrt{1+(1-q^{-1})|z|^2}}\,|q^{\frac{-1}{2}}z\rangle_{II}. \tag{5b}$$

$$\sigma^{(X_{II})}_{|z\rangle_I} = \frac{\frac{(2\mathrm{Real}(z))^2}{1+(1-q)|z|^2}\frac{\left(E_q\left((1-q)q^{\frac{1}{2}}|z|^2\right)\right)^2}{E_q\left((1-q)|z|^2\right)E_q\left((1-q)q|z|^2\right)}}{1+\frac{(1+q)|z|^2+2q^{\frac{1}{2}}\mathrm{Real}(z^2)}{1+(1-q)|z|^2}-\frac{(2\mathrm{Real}(z))^2}{1+(1-q)|z|^2}\frac{\left(E_q\left((1-q)q^{\frac{1}{2}}|z|^2\right)\right)^2}{E_q\left((1-q)|z|^2\right)E_q\left((1-q)q|z|^2\right)}},$$
$$|z|<\infty, \tag{14b}$$

$$\sigma^{(X_I)}_{|z\rangle_{II}} = \frac{\frac{(2\mathrm{Real}(z))^2}{1+(1-q^{-1})|z|^2}\frac{\left(e_q\left((1-q)q^{-\frac{1}{2}}|z|^2\right)\right)^2}{e_q\left((1-q)|z|^2\right)e_q\left((1-q)q^{-1}|z|^2\right)}}{1+\frac{(1+q^{-1})|z|^2+2q^{-\frac{1}{2}}\mathrm{Real}(z^2)}{1+(1-q^{-1})|z|^2}-\frac{(2\mathrm{Real}(z))^2}{1+(1-q^{-1})|z|^2}\frac{\left(e_q\left((1-q)q^{-\frac{1}{2}}|z|^2\right)\right)^2}{e_q\left((1-q)|z|^2\right)e_q\left((1-q)q^{-1}|z|^2\right)}},$$

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$$|z| < \frac{1}{\sqrt{1-q}}. \tag{14c}$$

$$Q^{(q^{\frac{N}{2}}a)}_{|z\rangle_I} = \frac{-q|z|^5(q-1)^2 + |z|^3(q^2-1)}{q|z|^4(q-1)^2 - |z|^2(q^2-1)+1}, \qquad |z| < \infty. \tag{16a}$$

$$Q^{(a)}_{|z\rangle_{II}} = \frac{-|z|^4(q-1)^2 - |z|^2 q(q^2-1)}{|z|^4(q-1)^2 + q|z|^2(q^2-1)+q^3}, \qquad |z| < \frac{q}{\sqrt{1-q}}, \tag{16b}$$

$$g^{(2)(q^{\frac{N}{2}}a)}_{|z\rangle_I}(0) = \frac{q|z|^2(q-1)-q}{q|z|^2(q-1)-1}, \qquad |z| < \infty, \tag{16c}$$

$$g^{(2)(a)}_{|z\rangle_{II}}(0) = \frac{|z|^2(q-1)+q}{|z|^2(q-1)+q^2}, \qquad |z| < \frac{q}{\sqrt{1-q}}. \tag{16d}$$

Since the discussions after Eqs. (14) and (16) were done with the correct forms, the results in the original paper are correct. It is necessary to mention that Fig. 2a–d has been plotted for $\theta = \pi$ in the original paper. Furthermore, we must clarify that the q-coherent states $|z\rangle_{II}$ exhibit the super-Poissonian statistics and bunching effect via operator a in $|z| < \frac{q}{\sqrt{1-q}}$. In Fig. 2b, the correct range for the $\sigma^{(X_{II})}_{|z\rangle_I}$ is from 0 to 6.

Reference

1. H. Fakhri, S.E. Mousavi-Gharalari, Nonclassical properties of two families of q-coherent states in the Fock representation space of q-oscillator algebra. Eur. Phys. J. Plus **135**, 253 (2020). https://doi.org/10.1140/epjp/s13360-020-00265-3