Erratum: Subsystem Purity as an Enforcer of Entanglement [Phys. Rev. Lett. 87, 050401 (2001)]

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There was a minor error in the published version of our Letter, which does not change the conclusions. In Eqs. (5) and (6) of the published version, Ω_{n+1} should be replaced by Ω_n throughout. The matrix ρ_{af}^n, just prior to Eq. (6), should be replaced by

$$\rho_{af}^n = \begin{pmatrix} P_{n-1}S_{n-1}^2 & 0 & 0 & 0 \\ 0 & P_n S_n^2 & P_n i C_n S_n & 0 \\ 0 & -iP_n C_n S_n & P_n C_n^2 & 0 \\ 0 & 0 & 0 & P_{n+1}C_{n+1}^2 \end{pmatrix}.$$

All of the above changes result in the interchange of C and S in Eq. (8) of the published version with the new expression for Λ_n given by

$$\Lambda_n = (S_n C_n)^2 - (S_{n-1}C_{n+1})^2 > 0.$$

The plot of Λ_n with t then changes slightly and is redrawn in this Erratum as Fig. 1.

From the new Fig. 1, it is clear that corresponding to a projection onto the $|0\rangle$, $|1\rangle$ subspace, the atom-cavity state is now always entangled except for values of $t = n\pi/2$. Compared with the earlier version of the Letter, this is a much larger domain for t, for which the state remains entangled. Thus, our conclusions about the presence of entanglement are strengthened.

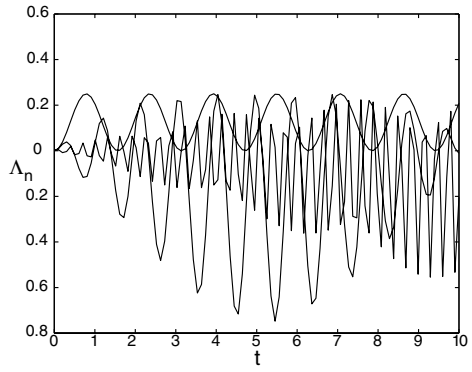

FIG. 1. Plots of the time variation of the inseparability expression Λ for three values of n. The fastest oscillating curve is for $n = 100$, the next fastest for $n = 10$, and the slowest oscillating curve is for $n = 0$.

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