

Erratum: Theory of Frequency-Filtered and Time-Resolved N -Photon Correlations [Phys. Rev. Lett. 109, 183601 (2012)]

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We correct a coding error (i) and an omission (ii).

(i) The figures were computed with filter linewidths Γ set to the Jaynes-Cummings transition widths γ_n . A mistake in encoding the latter formula in the computer led to the filter width used being $2\gamma_n = 2\gamma_\sigma + (4n-1)\gamma_a$ instead of the correct formula (given in the text) $2\gamma_n = 2\gamma_\sigma + 4(n-1)\gamma_a$. Using a different filter width results in the small quantitative differences, which have been reported to us, shown in the comparison in Figs. 1 and 2. Also line (iii) was computed with a slightly different filter position in panels (a) and (c), which we also correct in the new panels (d) and (f) (see caption for explicit filter position). The physical results, interpretations, and discussions are unaffected by these minor differences.

(ii) In order to ensure that the leading term in the correlation functions provided by the sensing method corresponds to the integral expressions, one needs to retain normal and time order of the sensor operators, as discussed in the text. This is assumed in the proof and its explicit mention is made by surrounding the operators with colons and the average with the subindex \mathcal{T} , that is, $\langle : : \rangle_{\mathcal{T}}$. However, these symbols were omitted twice in the main text, in Eq. (1) and in the subsequent in-line equation. That is, Eq. (1) in the main text should read

$$g_{\Gamma_1 \dots \Gamma_N}^{(N)}(\omega_1, T_1; \dots; \omega_N, T_N) = \lim_{\epsilon_1, \dots, \epsilon_N \rightarrow 0} \frac{\langle : n_1(T_1) \dots n_N(T_N) : \rangle_{\mathcal{T}}}{\langle n_1(T_1) \rangle \dots \langle n_N(T_N) \rangle} \quad (1)$$

and the following in-line equation should read $\langle : n_1(T_1) \dots n_N(T_N) : \rangle_{\mathcal{T}} = \frac{\epsilon_1^2 \dots \epsilon_N^2}{\Gamma_1 \dots \Gamma_N} (2\pi)^N S_{\Gamma_1 \dots \Gamma_N}^{(N)}(\omega_1, T_1; \dots; \omega_N, T_N)$

Normal and time reordering is important only when considering nonzero time differences, since different sensor operators commute at equal times. We have considered such order in all the calculations performed in the Letter [e.g., for Figs. 2(b) and 2(c)] and in all our subsequent papers based on this work. Therefore, none of our results, derivations, or

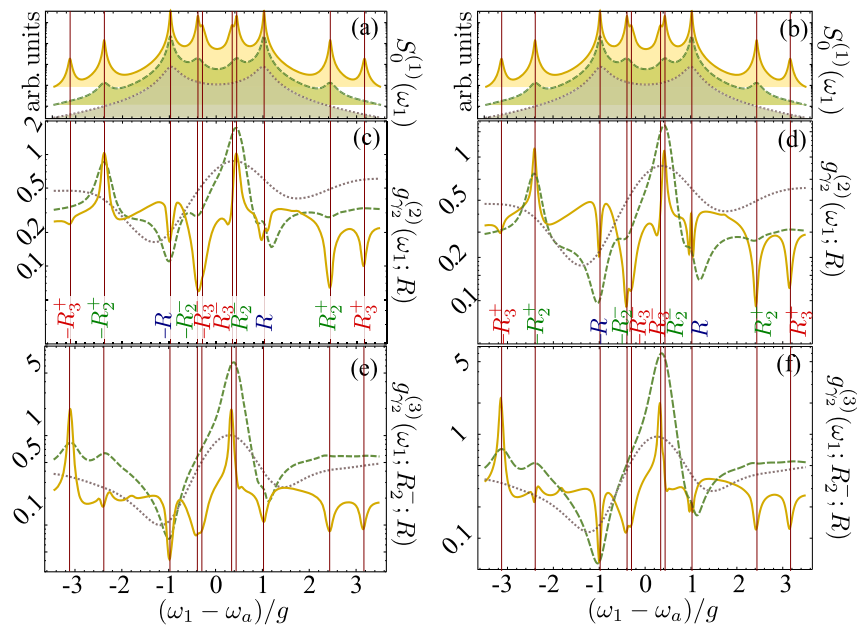


FIG. 1. Comparison of Fig. 1 of the main text using the filter linewidth $2\gamma_n = 2\gamma_\sigma + (4n-1)\gamma_a$ (left) and using $2\gamma_n = 2\gamma_\sigma + 4(n-1)\gamma_a$ (right).

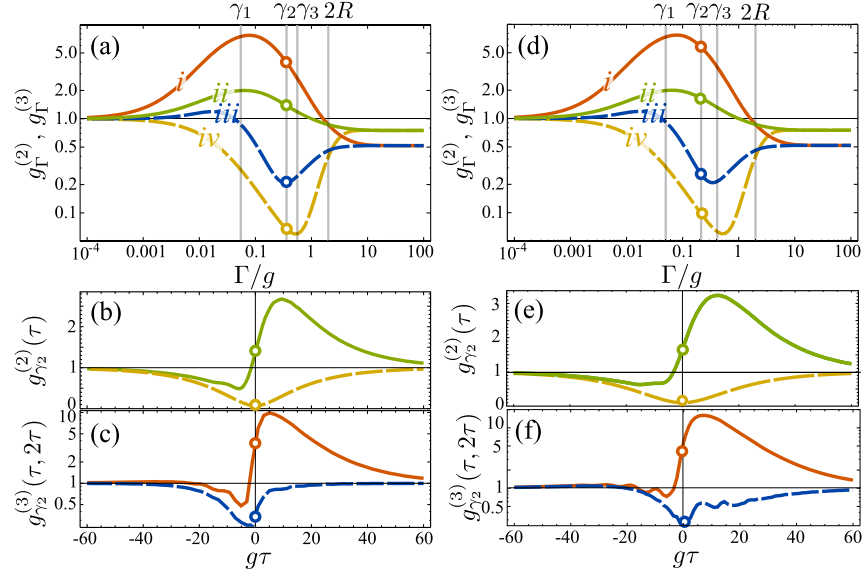


FIG. 2. Comparison of Fig. 2 of the main text using the filter linewidth $2\gamma_n = 2\gamma_\sigma + (4n-1)\gamma_a$ (left) and using $2\gamma_n = 2\gamma_\sigma + 4(n-1)\gamma_a$ (right), which in the right situation is $\gamma_2 = 0.21g$. For clarity, we also explicitly write the position of the filters: (i) $\omega_1 = R_3^-$, $\omega_2 = R_2^-$, $\omega_1 = R$, (ii) $\omega_1 = R_2^-$, $\omega_2 = R$, (iii) $\omega_1 = R_3^+$, $\omega_2 = R_2^-$, $\omega_1 = -R$, and (iv) $\omega_1 = R$, $\omega_2 = -R$.

analysis are affected by this omission. Besides, the lack of normal and time order in the calculations should lead to unphysical results (complex or negative values for $g^{(2)}$, etc).

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