

Erratum: Study the molecular nature of σ , $f_0(980)$, and $a_0(980)$ states **[Phys. Rev. D **101**, 094034 (2020)]**

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In this paper, we found some errors in the results, which are updated in this Erratum.

First, in Fig. 10 there were some typos in the results of the wave functions, and the real part of the wave function for the $f_0(500)$ (σ) state with $q_{\text{max}} = 931$ MeV was omitted. The corrected figure is presented in the new Fig. 10.

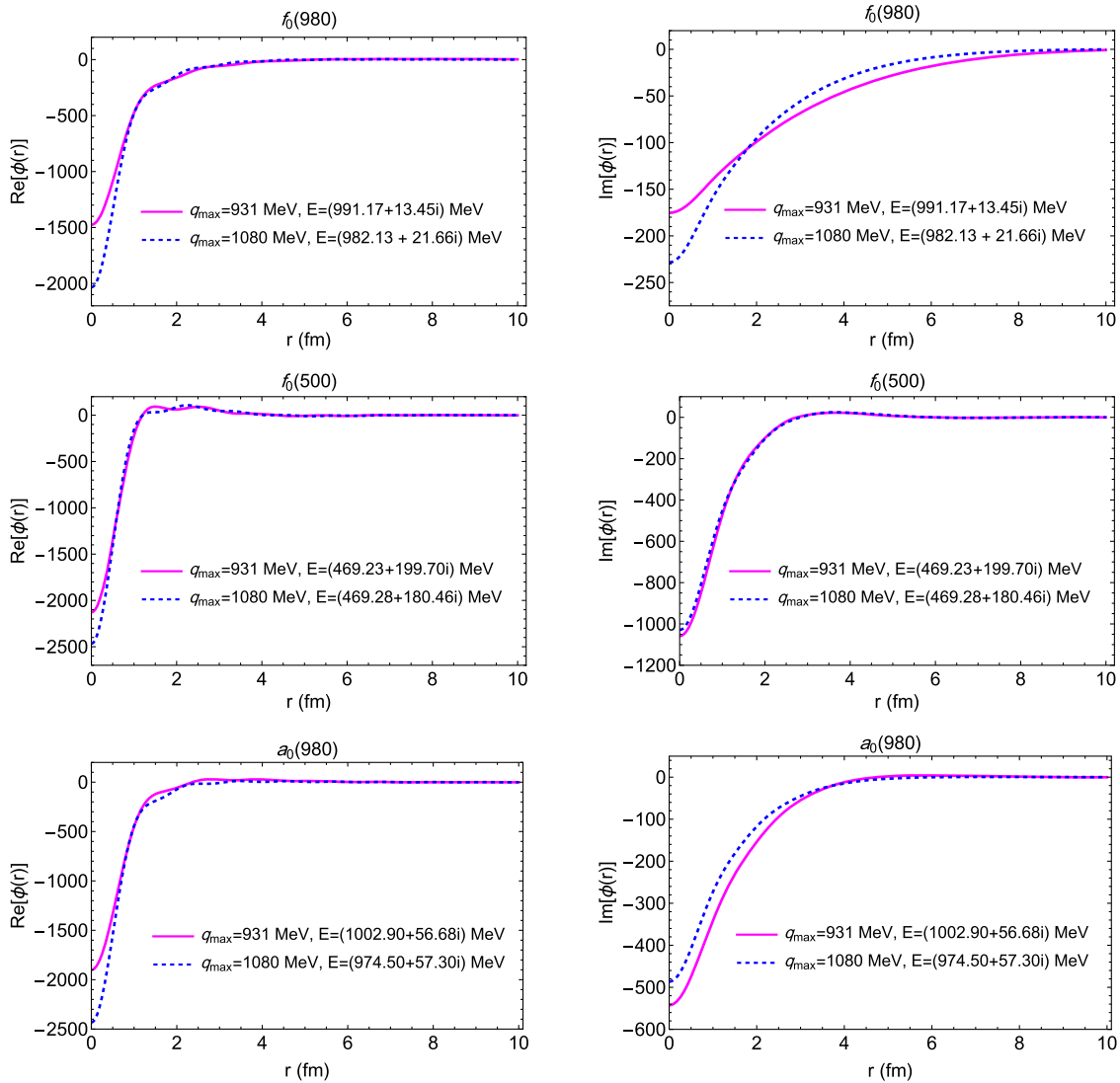


FIG. 10. Results of the real part and imaginary part of the wave functions for the $f_0(980)$ (upper panels), σ (middle panels), and $a_0(980)$ (lower panels) states.

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TABLE V. The radii of states calculated with Eq. (24) (only for the σ state).

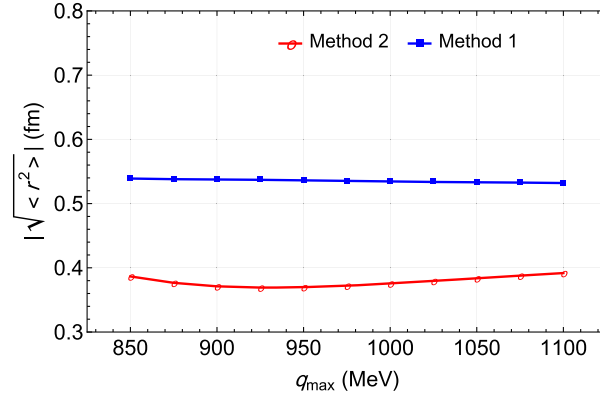
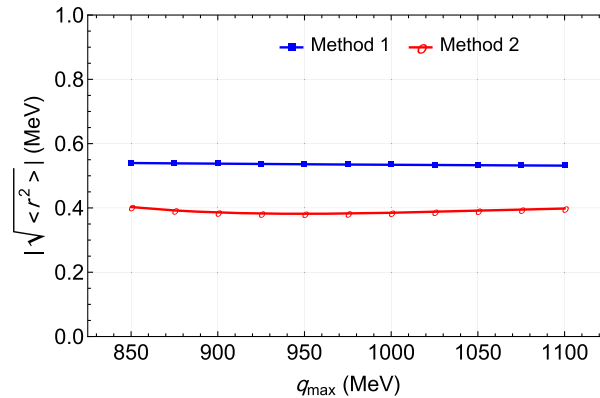
Resonance	$q_{\max} = 931 \text{ MeV}$	$ \sqrt{\langle r^2 \rangle} $	$q_{\max} = 1080 \text{ MeV}$	$ \sqrt{\langle r^2 \rangle} $
σ	$0.33 + 0.17i \text{ fm}$	0.37 fm	$0.30 + 0.25i \text{ fm}$	0.39 fm

TABLE IX. Radii of the states calculated with Eq. (24) in the single-channel case (only for the σ state).

Resonance	$q_{\max} = 931 \text{ MeV}$	$ \sqrt{\langle r^2 \rangle} $	$q_{\max} = 1080 \text{ MeV}$	$ \sqrt{\langle r^2 \rangle} $
σ	$0.35 + 0.16i \text{ fm}$	0.38 fm	$0.31 + 0.24i \text{ fm}$	0.40 fm

Second, we discovered an error in the code used to calculate the form factor of the σ state. This error affected the radii results obtained with Method II for both coupled- and single-channel cases. After the corrections, we update the results of the σ state as shown in the new Tables V and IX for the coupled- and single-channel cases, respectively. Finally, the corrected radii of the σ state as functions of the cutoff for both coupled- and single-channel cases are shown in the new Figs. 11 and 17, respectively. Note that the numerical results of Method I in the new Figs. 11 and 17 are the same as before, where we include them here for comparison as done in the original paper.

It should be mentioned that these corrections do not alter the main conclusions of our paper.

FIG. 11. Results of the radii by varying the cutoffs, where Method 1 means the radii calculated with Eq. (25), and Method 2 is the one with Eq. (24) [only for the subfigure (b) of the radii of σ].FIG. 17. Radii of the state σ (left) and $f_0(980)$ (right) as a function of cutoffs in the single-channel case, where Methods 1 and 2 are referred to the same as in Fig. 11. (only for the left one of the σ state).