Erratum: Effective field theory of Bose-Einstein condensation of α clusters and Nambu-Goldstone-Higgs states in ^{12}C [Phys. Rev. C **94**, 014314 (2016)]

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It was found that numerical calculations involving the Bogoliubov–de Gennes (BdG) modes with $\ell = 2$ and 4 were incorrect in the original paper. The results of the calculations affected are in Figs. 2, 3, 5–8 and in Table I. We revise them with the correct figures and table. The parameter sets *A* and *B* are updated according to the parameter fitting in Figs. 2 and 5: the parameter sets *A* ($\Omega = 1.80$, $V_r = 422$ MeV) and *B* ($\Omega = 2.42$, $V_r = 399$ MeV). The qualitative discussion presented in the original paper remains essentially intact because the numerical results have only slightly changed.

FIG. 2. Nambu-Goldstone-Higgs [(NGH), dotted lines] and BdG (solid and dashed lines) excitation energies with $\ell = 0, 2$, and 4 as a function of Ω when $V_r = 422$ MeV is fixed. The horizontal lines indicate the excitation energies of the observed α cluster states in ^{12}C [1–6], and the vertical line is a guide to the eye.

FIG. 3. The calculated energy levels for parameter set *A* ($\Omega = 1.80$, $V_r = 422$ MeV), compared with the observed α cluster states in ^{12}C [1–6].

FIG. 5. NGH (dotted lines) and BdG (solid and dashed lines) excitation energies with $\ell = 0, 2$, and 4 as a function of V_r for fixed $\bar{r} = 3.8$ fm.

FIG. 6. The calculated energy levels for parameter set *B* ($\Omega = 2.42$, $V_r = 399$ MeV).

FIG. 7. Numerical solutions of (a) $\xi(r)$, (b) $\eta(r)$, (c) $U_{12}(r)$, $V_{12}(r)$, and (d) $U_{14}(r)$, $V_{14}(r)$ for the parameter sets A and B .

FIG. 8. Calculated $|\Psi_\nu(q)|^2$ for parameter sets A and B .

TABLE I. Calculated reduced transition probabilities $B(E2: 2 \rightarrow 0)$ in units of $e^2 \text{ fm}^4$: Refs. [7,8] and our results for parameter sets A and B .

Transition	Ref. [7]	Ref. [8]	Ours (A)	Ours (B)
$2_2^+ \rightarrow 0_2^+$	100	295–340	280	142
$2_2^+ \rightarrow 0_3^+$	310	88–220	296	104

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- [1] M. Freer, H. Fujita, Z. Buthelezi, J. Carter, R. W. Fearick, S. V. Förtsch, R. Neveling, S. M. Perez, P. Papka, F. D. Smit, J. A. Swartz, and I. Usman, *Phys. Rev. C* **80**, 041303(R) (2009).
- [2] M. Itoh *et al.*, *Nucl. Phys. A* **738**, 268 (2004); *Phys. Rev. C* **84**, 054308 (2011).
- [3] W. R. Zimmerman, N. E. Destefano, M. Freer, M. Gai, and F. D. Smit, *Phys. Rev. C* **84**, 027304 (2011).
- [4] W. R. Zimmerman, M. W. Ahmed, B. Bromberger, S. C. Stave, A. Breskin, V. Dangendorf, T. Delbar, M. Gai, S. S. Henshaw, J. M. Mueller, C. Sun, K. Tittelmeier, H. R. Weller, and Y. K. Wu, *Phys. Rev. Lett.* **110**, 152502 (2013).
- [5] M. Itoh *et al.*, *J. Phys.: Conf. Ser.* **436**, 012006 (2013).
- [6] M. Freer, S. Almaraz-Calderon, A. Aprahamian, N. I. Ashwood, M. Barr, B. Bucher, P. Copp, M. Couder, N. Curtis, X. Fang, F. Jung, S. Leshner, W. Lu, J. D. Malcolm, A. Roberts, W. P. Tan, C. Wheldon, and V. A. Ziman, *Phys. Rev. C* **83**, 034314 (2011).
- [7] Y. Kanada-En'yo, *Prog. Theor. Phys.* **117**, 655 (2007).
- [8] Y. Funaki, *Phys. Rev. C* **92**, 021302(R) (2015).