

Erratum: Self-consistent quasiparticle random-phase approximation for a multilevel pairing model [Phys. Rev. C 76, 054302 (2007)]

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A factor of 2 is missing in Eq. (55) and in the code. The correct expression is

$$\langle D_j \rangle = \frac{1}{1 + 2 \sum_v (\mathcal{Y}_j^v)^2}. \quad (1)$$

We recalculated all quantities that include $\langle D_j \rangle$, namely the BCS1 and LN1 pairing gaps as well as energies of the ground state and first excited state within the self-consistent quasiparticle random-phase approximation (SCQRPA) and Lipkin-Nogami self-consistent quasiparticle random-phase approximation (LNSCQRPA). Very small changes are found in the pairing gaps and ground-state energies. As for the energies of the first excited state, the changes are negligible. For $N = 10$, the corrected critical value G_{cr} is now $\simeq 0.49$ MeV instead of 0.47 MeV. Overall, the corrected values of ground-state energies predicted by the LNSCQRPA become closer to the exact ones (except for small $N = 4$ at large $G > 1$ MeV), whereas those obtained within the SCQRPA remain practically unchanged. The new (corrected) values of chemical potentials λ and λ^\pm obtained within the LNSCQRPA almost coincide with the exact solutions. The largest discrepancy is seen at $G \simeq G_{cr}$, but it amounts to only 0.2%.

On the figures, distinguishable changes are seen only in the values predicted by the BCS1 and LN1 in Fig. 1¹ and the LNSCQRPA in Fig. 2(b) and Figs. 7(a)–7(c). As for the tables, corrections take place in the third and fifth columns of Table I; the third, fifth, seventh, and ninth columns of

TABLE I. The corrected energy difference $\Delta E \equiv E_{g.s.}(G) - E_{g.s.}(0)$ (replacing the old values in the third and fifth columns of Table I in the article), relative errors $\delta E^{(a)}$ and $\delta E^{(b)}$ (replacing the third, fifth, seventh, and ninth columns of Table II in the article).

G (MeV)	ΔE (MeV)		$\delta E^{(a)}$ (%)		$\delta E^{(b)}$ (%)	
	SCQRPA	LNSCQRPA	SCQRPA	LNSCQRPA	SCQRPA	LNSCQRPA
0.10		-0.05		25.00		0.04
0.20		-0.21		23.53		0.16
0.30		-0.52		18.18		0.31
0.35		-0.73		14.06		0.35
0.40		-0.99		10.00		0.35
0.47		-1.44		5.88		0.30
0.50	-1.64	-1.68	2.50	5.00	0.15	0.30
0.60	-2.57	-2.62	0.39	2.34	0.04	0.22
0.70	-3.75	-3.80	0.27	1.06	0.03	0.14
0.80	-5.13	-5.18	0.77	0.19	0.13	0.03
0.90	-6.68	-6.74	1.04	0.49	0.22	0.03
1.00	-8.38	-8.44	0.95	0.24	0.24	0.05
1.10	-10.19	-10.26	0.97	0.29	0.28	0.08
1.20	-12.09	-12.17	1.06	0.41	0.35	0.13
1.30	-14.06	-14.15	1.13	0.49	0.41	0.18
1.40	-16.10	-16.20	1.11	0.49	0.44	0.19

Table II, and all of Tables III and IV. The corrected parts of these figures and tables are given below.

All the conclusions in the article are not affected by these small corrections.

TABLE II. Table III (corrected) in the article.

G	BCS1			LN1		
	Δ	$\bar{\Delta}$	$\frac{\delta\Delta}{\Delta}(\%)$	$\tilde{\Delta}$	$\bar{\tilde{\Delta}}$	$\frac{\delta\tilde{\Delta}}{\tilde{\Delta}}(\%)$
0.01				0.0014	0.0014	0.0000
0.10				0.0571	0.0572	0.1748
0.20				0.2069	0.2088	0.9099
0.30				0.4863	0.4944	1.6383
0.40				0.9166	0.9326	1.7156
0.50	1.0013	1.0285	2.6446	1.4433	1.4626	1.3196
0.60	1.6882	1.7146	1.5397	2.0026	2.0225	0.9839
0.70	2.3068	2.3313	1.0509	2.5709	2.5903	0.7489
0.80	2.9085	2.9309	0.7643	3.1386	3.1569	0.5797
0.90	3.4971	3.5176	0.5828	3.7014	3.7188	0.4679
1.00	4.0743	4.0933	0.4642	4.2582	4.2747	0.3860
1.10	4.6416	4.6595	0.3842	4.8090	4.8249	0.3295
1.20	5.2005	5.2175	0.3258	5.3541	5.3695	0.2868
1.30	5.7522	5.7687	0.2860	5.8941	5.9094	0.2589
1.40	6.2979	6.3141	0.2566	6.4297	6.4450	0.2374

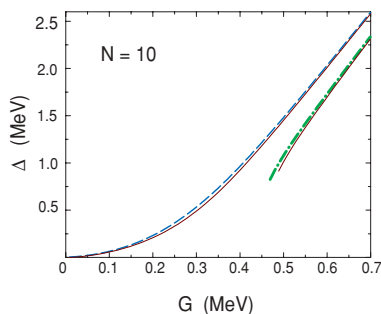


FIG. 1. (Color online) For Fig. 1 in the article: Pairing gaps Δ as functions of G for $N = 10$. The thick dashed and thick dash-dotted lines are the old results within the LN1 and BCS1, respectively, whereas the thin lines are the corresponding corrected results.

TABLE III. Table IV (corrected) in the article.

G	$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$\omega_3(a)$	$\omega_3(b)$
0.01	0.0000	0.0000	0.0000	0.0000	0.0000	2.0003	2.0003
0.20	0.0017	0.0023	0.0034	0.0054	0.0092	2.1625	2.1602
0.40	0.0047	0.0061	0.0083	0.0115	0.0172	2.7119	2.7036
0.60	0.0040	0.0047	0.0056	0.0066	0.0110	4.1980	4.1927
0.80	0.0027	0.0030	0.0033	0.0041	0.0066	6.1452	6.1417
1.00	0.0018	0.0020	0.0023	0.0030	0.0044	8.1756	8.1730
1.20	0.0013	0.0015	0.0018	0.0025	0.0034	10.208	10.206
1.40	0.0010	0.0012	0.0016	0.0022	0.0028	12.226	12.224

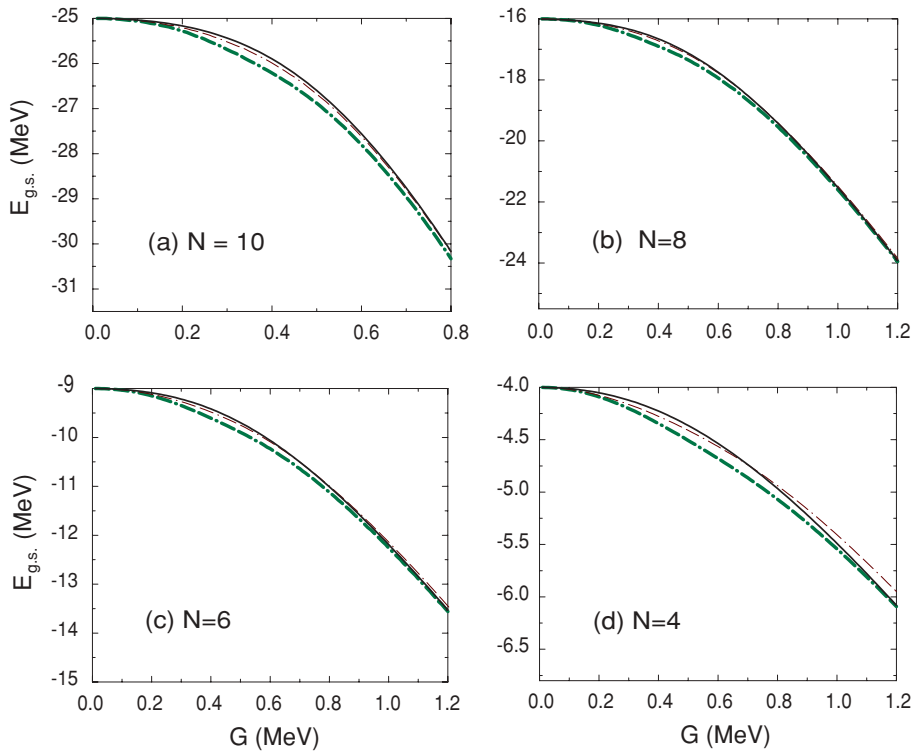


FIG. 2. (Color online) Ground-state energies as functions of G for several values of N as obtained within the LNSCQRPA in Figs. 2(b) ($N = 10$) and 7(a)–7(c) ($N = 8, 6, 4$) in the article. The thick and thin double-dash-dotted lines are the old and corrected results, respectively. The exact solution is shown by the thick solid line.