Erratum: Crossover from Fermi Liquid to Wigner Molecule Behavior in Quantum Dots [Phys. Rev. Lett. 82, 3320 (1999)]

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In our recent Letter on Monte Carlo work on quantum dots the numerical values for the energies of less than fully polarized states ($S < N/2$) given in Table I are incorrect, typically by 1%. This error is due to our use of the virial estimator [1] which assumes that the energy is evaluated for a true eigenstate Ψ of H. If the actual state is a superposition of eigenstates, e.g., $\Psi = a_1\Psi_1 + a_2\Psi_2$, where $\Psi_{1,2}$ are eigenstates with energy $E_{1,2}$, a short calculation shows that the energy is given by the virial expression used in our Letter plus the crucial additional term,

$$(E_1 - E_2)\mathrm{Im}\left[a_1 a_2^* \langle \Psi_2 | \sum_i \vec{x}_i \vec{p}_i | \Psi_1 \rangle \right],$$

where $\vec{p}_i$ is the momentum of the ith particle. This term matters for $S < N/2$ because the Monte Carlo simulation proceeds at fixed total z component of the electron spin and therefore receives contributions from higher S at finite temperatures. Using a standard estimator derived from $E_N = -\partial/\partial\beta \ln Z_N$ [1], we have recalculated the energies and list the corrected Table I below. All other conclusions of our work remain unchanged.

TABLE I. Corrected MLB data for the energy.

N	S	λ	$E/\hbar\omega_0$	N	S	λ	$E/\hbar\omega_0$
3	3/2	2	8.37(1)	5	5/2	8	42.86(4)
3	1/2	2	8.16(3)	5	3/2	8	42.82(2)
3	3/2	4	11.05(1)	5	1/2	8	42.77(4)
3	1/2	4	11.05(2)	5	5/2	10	48.79(2)
3	3/2	6	13.43(1)	5	3/2	10	48.78(3)
3	3/2	8	15.59(1)	5	1/2	10	48.76(2)
3	3/2	10	17.60(1)	6	3	8	60.42(2)
4	2	2	14.30(5)	6	1	8	60.37(2)
4	1	2	13.78(6)	7	7/2	8	80.59(4)
4	2	4	19.42(1)	7	5/2	8	80.45(4)
4	1	4	19.15(4)	8	4	2	48.3(2)
4	2	6	23.790(12)	8	3	2	47.4(3)
4	1	6	23.62(2)	8	2	2	46.9(3)
4	2	8	27.823(11)	8	1	2	46.5(2)
4	1	8	27.72(1)	8	4	4	69.2(1)
4	2	10	31.538(12)	8	3	4	68.5(2)
4	1	10	31.48(2)	8	2	4	68.3(2)
5	5/2	2	21.29(6)	8	4	6	86.92(6)
5	3/2	2	20.71(8)	8	3	6	86.82(5)
5	1/2	2	20.30(8)	8	2	6	86.74(4)
5	5/2	4	29.22(7)	8	4	8	103.26(5)
5	3/2	4	29.15(6)	8	3	8	103.19(4)
5	1/2	4	29.09(6)	8	2	8	103.08(4)
5	5/2	6	36.44(3)				
5	3/2	6	36.35(4)				
5	1/2	6	36.26(4)				

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[1] D. M. Ceperley, Rev. Mod. Phys. **67**, 279 (1995).

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