Erratum: Systematics of nuclear level density parameters [Phys. Rev. C 72, 044311 (2005)]

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Nuclear pairing plays an important role for nuclear level density parameters. We found in our recent publication that deuteron pairing reproduces best the experimental pairing effect, especially the one of the backshift parameters E_i. We used for this purpose the values Pa in the table by G. Audi (http://amdc.in2p3.fr/masstables/Ame2003/rct7.mas03), which were denoted P_d in our paper. These values are given in Table I of our original publication. The comment to G. Audi's table rct7.mas03 says that the deuteron pairing was calculated according to

$$P_d = \frac{1}{4}(-1)^{Z+1}[S_d(A+2, Z+1) - 2S_d(A, Z) + S_d(A-2, Z-1)],$$

where S_d is the deuteron separation energy (see also Ref. [18]). Consequently, this formula is given in this way in our publication. However, G. Audi informed us recently that the deuteron pairing values Pa in table rct7.mas03 are not calculated with this formula but with the older definition

$$Pa = \frac{1}{2}(-1)^{Z}[S_d(A+2, Z+1) - S_d(A, Z)].$$

Both formulas give in most cases similar values, but it has to be noted that they provide opposite signs. The formula here for Pa can also be written with mass excess, or mass values M, as

$$Pa = \frac{1}{2}(-1)^{Z}[-M(A+2, Z+1) + 2M(A, Z) - M(A-2, Z-1)].$$

We repeated the fits of the level density parameters with these new P_d values (with changed sign). The results for a, $\tilde{a}$, and T are nearly identical, whereas the fits for E_1, E_2, and E_0 are similar, but the old deuteron pairing Pa shows slightly better fit quality and should be used.

During these new fits we realized that it is better to use different formulas for odd-Z and odd-N nuclei. Therefore we recommend now for the backshift parameters E_i the formulas

$$E_i = \begin{cases} p_1 - 0.5Pa + p_4\frac{dS(Z,N)}{dA} & \text{(even-even nuclei)}, \\ p_2 - 0.5Pa + p_5\frac{dS(Z,N)}{dA} & \text{(even-}Z\text{, odd-}N\text{ nuclei)}, \\ p_2 + 0.5Pa - p_5\frac{dS(Z,N)}{dA} & \text{(odd-}Z\text{, even-}N\text{ nuclei)}, \\ p_3 + 0.5Pa + p_4\frac{dS(Z,N)}{dA} & \text{(odd-odd nuclei)}, \end{cases}$$

with the parameters of Table I here. These values and the results of the fits are very similar to the previous ones with improvement for the odd-Z even-N nuclei.

Furthermore, Ref. [10] has to be corrected to A. S. Iljinov *et al.*, Nucl. Phys. **A543**, 517 (1992).

TABLE I. Parameters to calculate the backshift values E_1, E_2, E_0.

E_i	p_1	p_2	p_3	p_4	p_5
E_1 (BSFG), E_2 (BSFG+ED)	−0.48(3)	−0.57(2)	−0.24(4)	0.29(11)	0.70(11)
E_0 (CT)	−1.24(4)	−1.33(3)	−1.22(6)	0.33(14)	0.90(14)

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