Erratum: Lifetime measurements with improved precision in ^{30,32}S and possible influence of large-scale clustering on the appearance of strongly deformed states [Phys. Rev. C 96, 034326 (2017)]

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We made a mistake when calculating the intrinsic quadrupole moment Q_0 [1] as given by Eq. (7). The correct version of Eq. (7) should therefore read

$$Q_0 = \frac{2Z\pi}{3} \frac{(6d^3R^2 - d^5 + 2d^2R^3 - 3dR^4)}{\frac{4\pi}{3}\left(R^3 + \frac{3}{2}dR^2 - \frac{1}{2}d^3\right)}. \quad (7)$$

The quantity Q_0 characterizes the quadrupole deformation of a charged body consisting of two overlapping spheres with equal radii R and distance $2d$ between their centers. The modification affects only the two-band mixing calculation performed with the aim to estimate d and the interaction strengths between the normal spherical states and the strongly deformed states associated with the two-cluster configuration. This calculation was repeated with the new expression [Eq. (7)], and the results are presented in the third column of Table III which replaces the previous Table III. The other items in the table remain unchanged. The new results of the fitting procedure are comparable in quality and are numerically comparable with the previous ones. The main changes concern the geometry of the two-cluster configuration, the interactions between the bands, and the mixing amplitudes. Thus, the deduced value for the half-distance parameter d is 1.28 fm (earlier 2.84 fm) which, being smaller, correlates better with the result for the radius $R(^{32}\mathrm{S}) = 3.26$ fm from the literature [4]. This configuration is characterized by $Q_0 = 72\ e\,\mathrm{fm}^2$, which is smaller than previously (104 $e\,\mathrm{fm}^2$) but still sufficient to lead, after mixing, to strong enhancement of the quadrupole collectivity. We mention also that the quadrupole moment $Q(2_1^+)$ is better described by the new calculation since the old value was $Q(2_1^+) = -13.8\ e\,\mathrm{fm}^2$ (see Table III). The smaller value of d (or Q_0) is of course related to the derivation in the present Erratum of larger interaction strengths and mixing amplitudes. Thus, the interaction strengths between the unperturbed states are now $V_{0^+,2^+} = 1.07, 0.95$ MeV, correspondingly, compared to 0.79 and 0.68 MeV previously. Concerning the mixing percentages, the mixing amounts to 9% (old value of 4.6%) at the 0^+ states and to 31% (old value of 12.6%) at the 2^+ states. To conclude, the corrected Eq. (7) for Q_0 of the two-cluster configuration seems to lead to even better consistency with the hypothesis of mixing between spherical and cluster states of the suggested type.

TABLE III. Experimental and theoretical values of quadrupole observables in ^{32}S. The two-level mixing calculation yields negative signs for the $\langle 0_1^+||E2||2_2^+\rangle$ and $\langle 2_1^+||E2||0_2^+\rangle$ reduced matrix elements whereas such signs characterize in our shell-model calculation (column 4) the $\langle 0_1^+||E2||2_1^+\rangle$ and $\langle 2_1^+||E2||2_1^+\rangle$ matrix elements.

Quantity	Experiment ($e\,\mathrm{fm}^2$)	Present paper: clusters ($e\,\mathrm{fm}^2$)	Present paper: shell model ($e\,\mathrm{fm}^2$)	Shell model [2] ($e\,\mathrm{fm}^2$)
$Q(2_1^+)$	−15.4 (2.0) [3]	−14.3	−11.7	
$\lvert\langle 0_1^+\lvert\lvert E2\rvert\rvert 2_1^+\rangle\rvert$	15.8 (6)	15.4	16.4	15.7
$\lvert\langle 0_1^+\lvert\lvert E2\rvert\rvert 2_2^+\rangle\rvert$	4.3 (2)	2.3	7.8	7.8
$\lvert\langle 2_1^+\lvert\lvert E2\rvert\rvert 2_2^+\rangle\rvert$	7.4 (1.0)	5.5	17.6	16.3
$\lvert\langle 2_1^+\lvert\lvert E2\rvert\rvert 0_2^+\rangle\rvert$	8.5 (2)	8.4	7.3	6.7

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