

**Erratum: Fission  $\gamma$  spectra and levels in  $^{139}\text{Ba}$  [Phys. Rev. C **64**, 054306 (2001)]**

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In this Erratum to our paper, we report the corrections to the previous paper of  $^{139}\text{Ba}$  and  $^{135}\text{Te}$ .

In our original paper we defined level energies based on certain transitions and then adjusted the raw data for other transitions to fit those energies. This is not a correct scientific procedure as it alters original data to match preconceived beliefs, and it has the danger of introducing the incorrect transition and level energies into the literature. The main purpose of this Erratum is to provide the original data.

Everywhere in the text where our original paper specified transition or level energies, these should now be replaced by the corresponding ones in Tables I and II. The new level schemes of  $^{139}\text{Ba}$  and  $^{135}\text{Te}$  are shown in Figs. 1 and 2.

In the original paper we report 1 ns/bin for timing signals. The actual value is about 0.25 ns/bin in the raw data.

In the original paper an estimated systematic standard deviation of about 0.1 keV was given. This deviation may be underestimated. The provided 0.1-keV energy is the standard deviation for the energy calibration. However, a detector with identification number (id) 72 during the August run had drifted a lot in energy and should be taken out for the data analysis. Details about the Ge detector id arrangements can be found in Ref. [1]. Furthermore, the energy calibration may shift a little when combining the bins for data compression. By concerning the influence mentioned above, we think the appropriate new systematic error should be about 0.15 to 0.2 keV. Further analysis is processing to get the systematic error more accurately.

Furthermore, the transition and level energies have been updated for the following additional reasons:

In the level scheme of Fig. 1 and Table I of the original paper, transition and level energies of  $^{139}\text{Ba}$  were given with two and three decimals, respectively. This is not suitable because the fitting errors were always, at least, an order of magnitude smaller

TABLE I. List of the  $\gamma$ -ray transition energies in keV in  $^{139}\text{Ba}$ . The old energy values are also listed for comparison. Note that the 702-keV transition labeled with a dagger was not placed in Table I of the original paper so it only has two decimals for the original value. The 589-keV transition reported in the original paper is not real.

$E_\gamma$		$E_i$	
Original	New	Original	New
115.137	<b>115.0</b>	2091.72	<b>2091.9</b>
148.443	<b>148.5</b>	1976.58	<b>1976.9</b>
230.872	<b>230.9</b>	1538.75	<b>1539.0</b>
255.710	<b>255.8</b>	3344.29	<b>3344.7</b>
289.386	<b>289.4</b>	1828.14	<b>1828.4</b>
340.378	<b>340.2</b>	4956.66	<b>4957.7</b>
387.653	<b>387.8</b>	2479.37	<b>2479.7</b>
520.258	<b>520.3</b>	1828.14	<b>1828.4</b>
*589.513		2681.23	
†702.61	<b>702.5</b>	4046.90	<b>4047.3</b>
725.334	<b>726.3</b>	4616.28	<b>3849.0</b>
768.177	<b>768.5</b>	3890.95	<b>4617.5</b>
902.564	<b>901.2</b>	3381.93	<b>3380.9</b>
958.325	<b>958.4</b>	4046.90	<b>4047.3</b>
996.860	<b>997.0</b>	3088.58	<b>3088.9</b>
1031.049	<b>1030.8</b>	3122.77	<b>3122.7</b>
1307.877	<b>1308.1</b>	1307.88	<b>1308.1</b>

TABLE II. List of the  $\gamma$ -ray transition energies in keV in  $^{135}\text{Te}$ . The old energy values are also listed for comparison. Tentative transitions are labeled with parentheses. Note that the 50.0-keV transition labeled with an asterisk was not given the energy in the original paper.

$E_\gamma$		$E_i$	
Original	New	Original	New
*50.0	<b>50.0</b>	1555.3	<b>1555.1</b>
248.6	<b>248.2</b>	4591.1	<b>4590.6</b>
265.2	<b>265.3</b>	5790.5	<b>5790.8</b>
319.3	<b>319.0</b>	6109.8	<b>6109.7</b>
325.0	<b>325.0</b>	1505.3	<b>1505.1</b>
345.4	<b>344.9</b>	6455.2	<b>6455.0</b>
354.6	<b>355.0</b>	5525.3	<b>5525.4</b>
370.2	<b>370.4</b>	4393.6	<b>4394.0</b>
371.7	<b>371.3</b>	5170.7	<b>5170.8</b>
405.4	<b>405.3</b>	4799.0	<b>4799.5</b>
461.2	<b>460.4</b>	2016.5	<b>2015.5</b>
468.1	<b>468.2</b>	6109.8	<b>6109.7</b>
559.8	<b>559.7</b>	6669.6	<b>6669.4</b>
(584.5)	<b>(585.3)</b>	6109.8	<b>6109.7</b>
593.4	<b>593.5</b>	3233.7	<b>3233.8</b>
619.8	<b>620.0</b>	5790.5	<b>5790.8</b>
653.3	<b>653.1</b>	2208.6	<b>2208.2</b>
(664.7)	<b>664.4</b>	6455.2	<b>6455.0</b>
726.3	<b>726.1</b>	5525.3	<b>5525.4</b>
741.3	<b>740.7</b>	6383.0	<b>6382.1</b>
775.6	<b>776.2</b>	4799.0	<b>4799.5</b>
777.1	<b>776.9</b>	5170.7	<b>5170.8</b>
830.7	<b>(830.5)</b>	3471.0	<b>3471.0</b>
922.6	<b>922.8</b>	4393.6	<b>4394.0</b>
1050.6	<b>1050.9</b>	5641.7	<b>5641.4</b>
1085.0	<b>1085.2</b>	2640.3	<b>2640.3</b>
1108.8	<b>1108.8</b>	4342.5	<b>4342.6</b>
1180.3	<b>1180.1</b>	1180.3	<b>1180.1</b>
1262.4	<b>1262.7</b>	3471.0	<b>3471.0</b>
1328.0	<b>1328.8</b>	4799.0	<b>4799.5</b>
1357.4	<b>1356.7</b>	4591.1	<b>4590.6</b>
1560.8	<b>1561.7</b>	6151.9	<b>6152.3</b>
1678.4	<b>1678.7</b>	3233.7	<b>3233.8</b>
1915.7	<b>1916.1</b>	3471.0	<b>3471.0</b>
1937.0	<b>1937.0</b>	5170.7	<b>5170.8</b>
2006.9	<b>2007.8</b>	4023.4	<b>4023.3</b>
2185.0	<b>2186.0</b>	4393.6	<b>4394.0</b>
2291.6	<b>2291.0</b>	5525.3	<b>5525.4</b>
2408.0	<b>2407.5</b>	5641.7	<b>5641.4</b>
2468.1	<b>2468.3</b>	4023.4	<b>4023.3</b>
2518.1	<b>2518.2</b>	4023.4	<b>4023.3</b>
2838.3	<b>2839.1</b>	4393.6	<b>4394.0</b>

than the systematic standard deviation. Such information can be found in Table I of the original paper. Thus, the new transition and level energies are given with only one decimal in this Erratum.

In the original paper, the placement of the 768- and 725-keV transitions in  $^{139}\text{Ba}$  was not correct. By rechecking the data, their orders in the level scheme should be reversed. Furthermore, the 725-keV transition reported in the original paper has been remeasured as 726 keV which shifted about 1 keV. The tentative 702-keV transition reported in the original paper is now firmly assigned. The 589-keV transition reported in the original paper is not real. It is a contamination from the fission partner  $^{108}\text{Mo}$  decaying from the 783-keV level to the 193-keV level.

In the original paper, the spins and parities of the 1180- and 1505-keV levels in  $^{135}\text{Te}$  were labeled as tentative. They are firmly labeled in this Erratum as the later angular correlation work [2] confirmed  $E2$  types for the 1180- and 325-keV transitions. The 50.0-keV transition was not given the energy in the original paper but can be deduced from the energy gap from the 1555- and



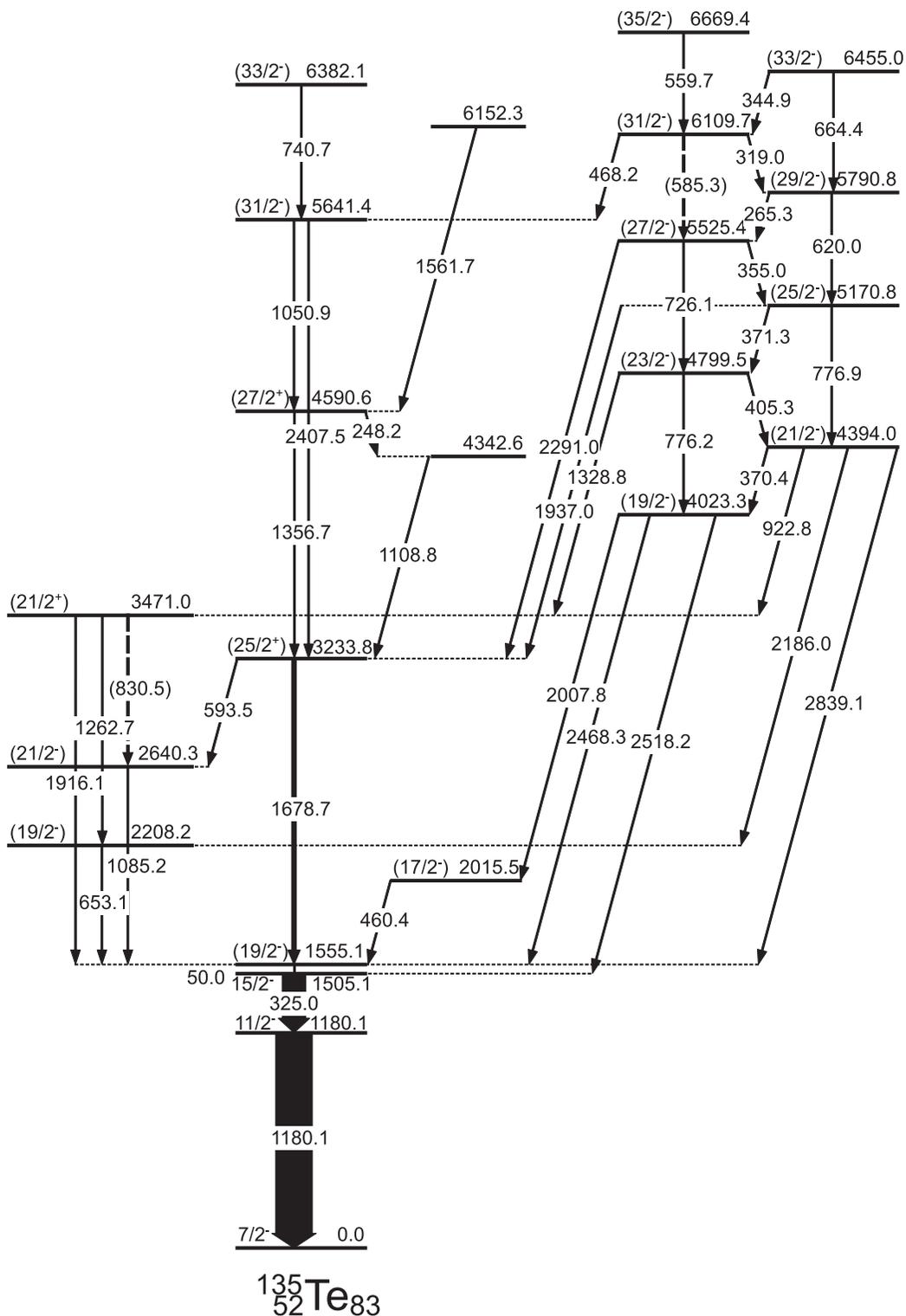


FIG. 2. Level scheme showing levels and transitions in  $^{135}\text{Te}$ .

[1] <https://www.phy.anl.gov/gammasphere/doc/detector-angles.html>

[2] S. H. Liu *et al.*, *Phys. Rev. C* **81**, 014316 (2010).

[3] B. Fornal *et al.*, *Phys. Rev. C* **63**, 024322 (2001).