

Erratum: Exploring the fission barrier of ^{235}U [Phys. Rev. C 104, 024611 (2021)]

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Due to an improper application of the so-called $^2\log$ -scale binning to measured decay data from the isomeric fission of ^{235}U , the deduced half-life of the corresponding shape isomer, as presented in the original article, is erroneous. We became aware of this mistake when analyzing experimental data from the decay of other fission isomers. In the following, we present the correct treatment of the data reported in the original publication and give an updated value for the half-life of ^{235f}U .

In the original article, the content of each bin was assigned to their respective high limits, while it should have been assigned to the low limits instead. This is done with the data shown here in Fig. 1. Moreover, previously the fit to the experimental data was performed without weighting the statistical uncertainties, in order to include empty bins. Now, a correctly weighted least-squares fit is applied with the results in terms of the half-life of the shape isomer, $T_{1/2}$, as well as the total number of isomeric fission events, N_{iso} , updated in Table I and compared with the values published in the original article. Obviously, the uncertainties of the fit results are somewhat larger than before, since the uncertainties of the data were taken into account. Finally, it is important to mention that the changes reported here have no impact on the deduced barrier parameters, cf. Table II of the original article, and therefore neither on the ratio of partial half-lives $T_{1/2}(i\gamma)/T_{1/2}(if) \approx 3$. With this ratio and the isomeric half-life deduced here, $T_{1/2} = 8.1$ ms, one may estimate the partial half-lives $T_{1/2}(if) \approx 11$ ms and $T_{1/2}(i\gamma) \approx 32$ ms, respectively.

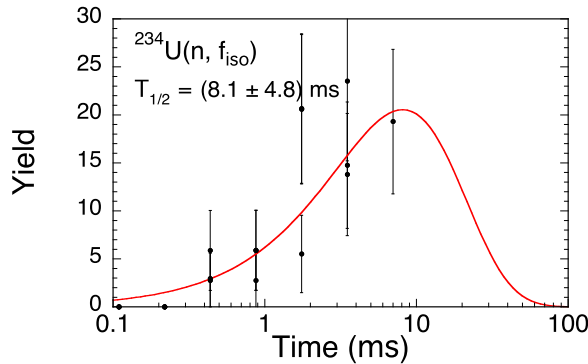


FIG. 1. Updated decay time spectrum of the shape isomer in ^{235}U . The experimental data, together with statistical uncertainties, are compared to the result of a fit according to Eq. (1) in the original article. This figure replaces Fig. 1 in the original article.

TABLE I. Experimental results related to the isomeric fission of $^{235f}\text{U}^*$ at both incident neutron energies and an average energy $\bar{E}_n = 1.16$ MeV on ^{234}U . The half-life of the shape isomer, determined for the combined data as shown in Fig. 1, was kept constant when estimating N_{iso} for the individual energies. This introduced a systematic uncertainty, which is included. The values given in this table replace the corresponding ones in Table I of the original article, where indicated.

E_n (MeV)	This work			Original article
	0.95	1.27	1.16	
$T_{1/2}$ (ms)			8.1 ± 4.8	11 ± 3
N_{iso}	44 ± 10	41 ± 13	82 ± 33	79 ± 10
$N_{\text{prompt}} (\times 10^6)$	2.73	5.30	8.03	8.03
$P_{\text{iso}} (\times 10^{-6})$	16 ± 4	8 ± 2	10 ± 4	10 ± 1
$\sigma_{n,f}$ (b)	1.08	1.25	1.19	1.19
σ_{iso} (μb)	17 ± 4	10 ± 2	12 ± 5	12 ± 1