Erratum: Precision Mass Measurements on Neutron-Rich Rare-Earth Isotopes at JYFLTRAP: Reduced Neutron Pairing and Implications for r -Process Calculations [Phys. Rev. Lett. **120**, 262701 (2018)]

M. Vilen¹, J. M. Kelly, A. Kankainen, M. Brodeur, A. Aprahamian, L. Canete, T. Eronen, A. Jokinen, T. Kuta, I. D. Moore, M. R. Mumpower, D. A. Nesterenko, H. Penttilä, I. Pohjalainen, W. S. Porter, S. Rinta-Antila, R. Surman, A. Voss, and J. Äystö

(Received 15 August 2019; published 24 March 2020)

DOI: [10.1103/PhysRevLett.124.129901](https://doi.org/10.1103/PhysRevLett.124.129901)

A recent remeasurement of the ^{163}Eu and ^{163}Gd mass excesses [1] by our group, using $^{133}\text{Cs}^+$ and $^{136}\text{Xe}^+$ as calibrants, respectively, revealed that the $^{163}\text{Dy}^+$ calibrant used in the measurement reported in [2] was incorrectly assigned. Following a detailed analysis presented in [1], it was found that the calibrant was most likely $^{146}\text{La}^{16}\text{O}^+\text{H}^+$, or its mixture with $^{163}\text{Dy}^+$.

During the same campaign [1] the mass excess of ^{162}Eu was also remeasured since the type and duration of the excitation for the measurement reported in [2] did not allow to resolve a low-lying isomeric state reported in [3]. The new JYFLTRAP measurements [1] were done both with the phase-imaging ion cyclotron resonance technique and also using a longer excitation time (1600 ms) in the time-of-flight ion cyclotron resonance measurements. The new ground and isomeric state mass-excess values of ^{162}Eu and $^{162}\text{Eu}^m$ reported in [1] agree with [3].

In conclusion, the mass-excess values of $^{162,163}\text{Eu}$, and ^{163}Gd from [1] should be considered as superseding the ones from [2]. In [2], ^{163}Eu and ^{163}Gd made use of an incorrectly assigned calibrant, and the ^{162}Eu mass excess was a mixture of both ground state and isomeric state due to the type and length of the excitation used. We note that the changes in the mass-excess values of $^{162,163}\text{Eu}$, and ^{163}Gd do not change the conclusions presented in [2]. The S_{2n} values do not support a subshell closure at $N = 100$ (see Fig. 1) and neutron pairing has been found to be weaker than predicted by the theoretical models (see Fig. 2). The S_n values change only a little with the revised $^{162,163}\text{Eu}$ and ^{163}Gd mass values, and hence the impact on the r process abundances is small. For details, see [1].

FIG. 1. Figure 2 of [2] with the revised mass-excess values of $^{162,163}\text{Eu}$, and ^{163}Gd . Two-neutron separation energies S_{2n} from this work (red) together with the experimental (solid black circles) values and an extrapolated value for ^{165}Tb (open black circle) from AME16 [4].

FIG. 2. Figure 3 of [2] with the revised mass-excess value of ^{163}Gd . Neutron pairing energies from this work (red circles) and AME16 (blue) in comparison with various theoretical predictions for the Gd isotopes.

- [1] M. Vilen, J. Kelly, A. Kankainen, M. Brodeur, A. Aprahamian, L. Canete, R. de Groote, A. de Roubin, T. Eronen, A. Jokinen, I. Moore, M. Mumpower, D. Nesterenko, J. O'Brien, A. P. Perdomo, H. Penttilä, M. Reponen, S. Rinta-Antila, and R. Surman, related paper, *Phys. Rev. C* **101** 034312 (2020).
- [2] M. Vilen, J. M. Kelly, A. Kankainen, M. Brodeur, A. Aprahamian, L. Canete, T. Eronen, A. Jokinen, T. Kuta, I. D. Moore, M. R. Mumpower, D. A. Nesterenko, H. Penttilä, I. Pohjalainen, W. S. Porter, S. Rinta-Antila, R. Surman, A. Voss, and J. Äystö, *Phys. Rev. Lett.* **120**, 262701 (2018).
- [3] D. J. Hartley *et al.*, *Phys. Rev. Lett.* **120**, 182502 (2018).
- [4] M. Wang, G. Audi, F. Kondev, W. Huang, S. Naimi, and X. Xu, *Chin. Phys. C* **41**, 030003 (2017).