

Erratum: Landscape of Two-Proton Radioactivity [Phys. Rev. Lett. 110, 222501 (2013)]

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In our Letter, the proton pairing gaps were incorrectly read from the file containing their calculated values. This affected our predicted values of Q_p for even-even nuclei and of Q_p , Q_{2p} , and Q_α values for even-odd systems. Consequently, the text in the *Results* section needs to be corrected together with Figs. 1 and 2.

To identify cases where true, simultaneous ($2p$) emission is the dominating decay mode, following a discussion in Ref. [1], we apply the energy criterion $Q_{2p} > 0$, $Q_p < 0.2Q_{2p}$ which is less restrictive than Eq. (1). We find candidates for this type of decay, fulfilling in addition the half-life constraints, Eqs. (2) and (3), only in elements up to tellurium (see corrected Fig. 2).

In the region between tellurium and lead, the half-life criteria are found to be fulfilled for cases which satisfy the energy conditions $Q_{2p} > 0$, $Q_{2p} > Q_p > 0.2Q_{2p}$ which indicates the *sequential emission* of two protons (pp). We do find candidates for this kind of decay in every even- Z isotope above Te, except in xenon, where alpha decay dominates. The predicted average path of sequential pp radioactivity, calculated with the direct model and shown in new Fig. 1, practically coincides with the $T_{2p} = 0.1$ s limit given by the diproton model. As stated in our Letter, in nuclei above lead,

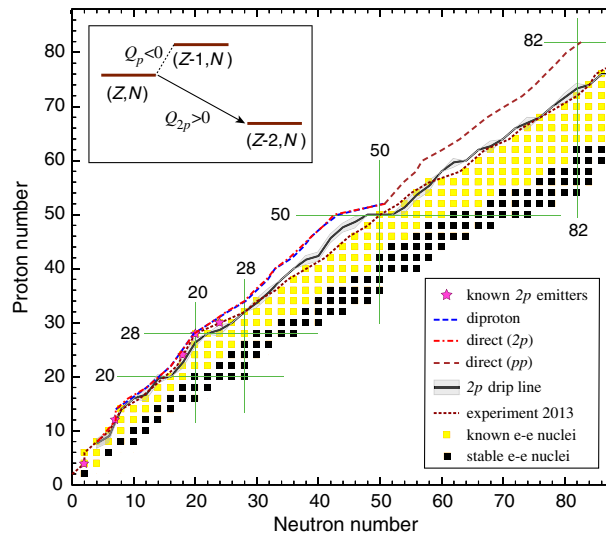


FIG. 1 (color online). Corrected version of Fig. 1. A new line has been added that represents the average path of sequential pp emission as predicted in the direct model. Otherwise the figure caption needs no correction.

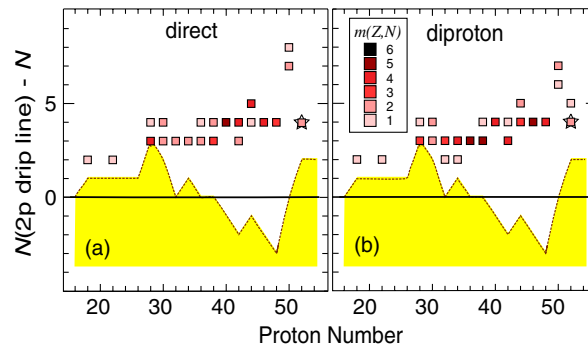


FIG. 2 (color online). Corrected version of Fig. 2. The figure caption needs no correction.

the α -decay mode is found to be dominating and no measurable candidates for two-proton emission are expected. Consequently, the physics conclusions derived from the corrected Fig. 1 have not changed as compared to the original Fig. 1.

In the region beyond ^{54}Zn , the $2p$ -decay candidates which are closest to current experimental reach and predicted by both the direct and diproton models are ^{57}Ge (3), $^{62,63}\text{Se}$ (2,1), ^{66}Kr (3), and ^{103}Te (2), where the numbers in parentheses indicate the corresponding number of neutrons beyond the most neutron-deficient isotope known to date. All other cases, including the sequential pp emitters, are located by more than 3 neutrons away from the present body of known isotopes. This distance increases with atomic number and reaches 14 neutrons for ^{165}Pb , which is predicted to be the pp -emitting lead isotope closest to the drip line.

In a few cases, competition between two-proton emission and α decay is predicted. The two best candidates, predicted by at least two mass models, are ^{103}Te and ^{145}Hf . The nucleus ^{103}Te appears as one of the most interesting cases in our survey. Two mass models (SV-min and UNEDF1) predict the competition between α decay and true $2p$ radioactivity, one model (SLy4) predicts the competition between α decay and sequential pp decay, and one model (SkM*) predicts the dominance of α decay. In ^{145}Hf , α decay is predicted to compete with sequential pp emission.