Abstract Submitted
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Improving systematic predictions of beta-delayed neutron emission probabilities[1] E.A. MCCUTCHAN, A.A. SONZOGNI, T.D. JOHNSON, NNDC, Brookhaven National Laboratory — The probability for neutron emission following β decay, P_n, is a crucial property for a wide range of physics and applications including nuclear structure, astrophysics, the control of nuclear reactors, and the post-processing and handling of nuclear fuel. Despite much experimental effort, knowledge of P_n values is lacking in very neutron-rich nuclei, requiring predictions from either systematics or theoretical models. Traditionally, systematic predictions [1] were made by investigating the P_n value as a function of the Q value of the decay and the neutron separation energy. Here, we will present a new form of systematic studies utilizing the well-known relationship between the P_n value and the half-life of the decay. It will be shown that such systematics provide more robust predictions of P_n values compared with earlier prescriptions, are applicable to all known β-delayed neutron emitters across the nuclear chart, and are a general feature of not only the data, but also the theoretical models.

[1] B. Pfeiffer *et al.,* Prog. Nucl. Energy **41**, 39 (2002).

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