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U.S. DEPARTMENT OF ENERGY

Missing %Iγ uncertainty in the ENSDF

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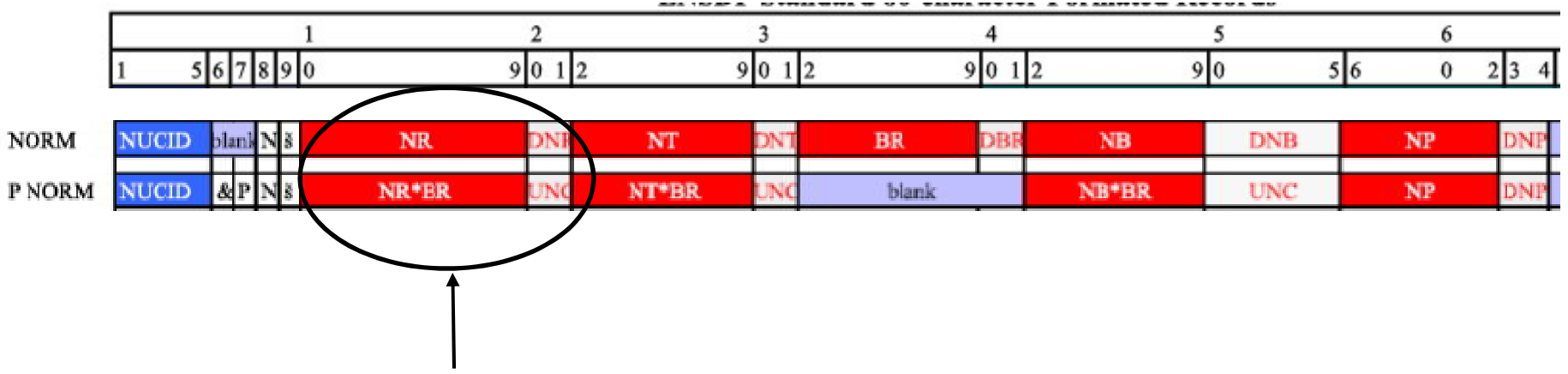
Background – decay data normalization

- There are several methods to normalize the decay data
  - From measured emission probabilities:
    - a) P_{γ}
    - b) $P_{\beta-}$ or $P_{\beta+}$ - other than the g.s.
    - c) From relative I_{γ} and known P_{γ} of one of the pair in transient or secular equilibrium
  - Direct g.s. beta feeding is known
  - Annihilation radiation intensity is known
  - x-ray intensity is known
  - x-ray - γ-ray coincidence intensity is measured

NORM and P NORM cards



%Iγ in the pdf

%Iγ = Iγ (relative) * NR * BR

If ΔI (often for Iγ=100) and ΔNR and ΔBR (for 100%) are missing, then %Iγ yields no uncertainty

An example:

^{95}Rh ε decay (5.02 min) **1981Gr20,1979Zy03,1975We03**

Parent: ^{95}Rh: E=0.0; $J^{\pi}=9/2^{+}$; $T_{1/2}$=5.02 min *10*; Q(ε)=5112 *12*; %ε+%β^{+} decay=100.0

γ(^{95}Ru)

Iγ normalization: From ΣIγ(to g.s.)=100, assuming no g.s. to g.s. feeding.

E_γ †	I_γ †e	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	α
895.0[p] *3*	2.4 *2*	2246.9	$11/2^+$	1352.00	$9/2^+$		
906.9 *3*	0.85 *9*	2258.80	$(9/2,11/2)^+$	1352.00	$9/2^+$		
941.6 *3*	100	941.70	$7/2^{(+)}$	0.0	$5/2^+$		

[e] For absolute intensity per 100 decays, multiply by 0.67817.

%Iγ(941.6) = Iγ (relative) * NR * BR
= 100 * 0.67817 * 1
= 67.817 (no uncertainty)

Similar case in ^{97}Ru EC decay for %Iγ(215.7)

Observations and thoughts:

- I have searched the database:
  - Dozen of cases need to be checked
- Important to fix the datasets
  - Otherwise takes much longer by mass chain
  - And there is a chance of missing again
- If time permits can we devote some time during the upcoming NSDD - to fcheck/fix a few of those the datasets (12 or so)
  - Benefits:
    - Corresponding centers can check their datasets
    - Brings awareness of the case – useful both for the evaluator and reviewer
    - Joy of doing things together