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U.S. DEPARTMENT OF ENERGY

Action #30, 2019 NSDD: Compilation of ENSDF policies adopted at previous NSDD meetings

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NSDD meeting (virtual), Apr 4 - 7, 2022

NSDD meeting Reports - checked:

https://www-nds.iaea.org/publications/group_list.php?group=INDC-NDS

- 14th meeting – 2000 – indc-nds-0422
- 15th meeting – 2003 – indc-nds-0456 and 0421
- 16th meeting – 2005 – indc-nds-0476 @McMaster U., Canada
- 17th meeting – 2007 – indc-nds-0513 @St. Petersburg, Russia
- 18th meeting – 2009 – indc-nds-0559
- 19th meeting – 2011 – indc-nds-0595
- 20th meeting – 2013 – indc-nds-0634 @U. of Kuwait, Kuwait
- 21th meeting – 2015 – indc-nds-0687
- 22th meeting – 2017 – indc-nds-0733 @Berkeley, USA

Adoption vs. Recommendation

14th meeting – 2000 – indc-nds-0422:

Uncertainty

Annex 9. Proposals/Position Papers – page 83

2. Simple way to avoid underestimating uncertainties of the evaluated values for sets of consistent data: a proposal for an improvement of evaluation, page 87

   V.P. Chechev, Radionuclide Data Center, V.G. Khlopin Radium Institute, Russia

- The topic was also discussed in other later meetings. In the *.ave output of “Consistency check” – Jun adopted it as a suggestion

15th meeting – 2003 – indc-nds-0456:

Rule for isospin assignment

Annex 7. Proposals/Position Papers – page 137

Response to Action 30 in NSDD2000

F.E. Chukreev (CAJAD, Moscow) – page 138

In the cases, where level energy (A ≤ 61) agrees with the formulae:

E(N,Z)= Eb(N,Z) – Eb(N + 1,Z - 1) + 1.484 (Z - 1/2)/À1/3 - 1.293 MeV for N>Z

E(N,Z)= Eb(N,Z) – Eb(N - 1,Z + 1) - 1.484 (Z + 1/2)/À1/3 + 1.293 MeV for N<Z

then isobaric spin =isobaric spin (g.s) +1 may be assigned for the level.

In the formulae ***Eb*** is binding energy.

Reference:

2002Bo12 I.N.Boboshin, V.V.Varlamov, B.S.Ishkhanov. Bull.Rus. Acad. Sci; Phys. 66, 813 (2002); Formula for Energy of First Excited Nuclear State with Isospin T>

16th meeting – 2005 – indc-nds-0476:

Spin/Parity

2.3.12 Adopted data (C.M. Baglin (LBNL)) – page 18

The strong J^{π} rule for proton decay was discussed in detail. Baglin declared that for spherical odd-Z, even-N nucleus, the spin and parity of a level exhibiting proton decay can be taken to be equal to a particular set of J^{π} values of the emitted proton provided that:

(a) transition reaches the ground state of the daughter nucleus;

(b) proton J^{π} values are physically reasonable (i.e., supported by systematic studies and/or shell-model calculations);

(c) calculated proton radioactivity half-life for those J^{π} values is smaller than the experimental value;

(d) calculated proton radioactivity half-lives for the other physically possible J^{π} values are far larger or far smaller than the experimental value.

These observations and proposals were accepted in full.

In NDS General Policies (40)

16th meeting – 2005 – indc-nds-0476: Cont'

Resonance data

3. Technical Recommendations: page 19

only a few are copied here

7. Resonance data should be given for all mass regions - page 20

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10. Similar to the decay evaluations (DDEP), other horizontal evaluations should be consulted during mass-chain evaluation.

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17th meeting – 2007 – indc-nds-0513

Band related

2.4.4. Labelling of bands, configurations and cascades in ENSDF/NDS – page 14

The aim of this initiative was to promote uniformity and presentation in the labelling of bands and cascades. Various guidelines were proposed:

a) to g)

ACTION: All network participants to consider the proposals of Singh/Kondev for the labelling of bands, configurations and cascades – follow these established rules, and provide comments/criticisms.

2.5. Transition quadrupole moments (F.G. Kondev (ANL) and B. Singh (McMaster University)) – see also Annex 6 – page 14

6.3. Recommended J^{π} assignments for the RIPL library (Firestone) – p 22

Firestone proposed that in order to accommodate the needs of RIPL we define a level continuation record TJ^{π} that would give the evaluator's suggested J^{π} value. TJ^{π} records should only be given when the Adopted Levels J^{π} field is blank or contains multiple possible values and the evaluator can propose a J^{π} value on the basis of nuclear model calculations or systematics. The TJπ record is most important for Adopted Levels datasets in nuclei that are produced by neutron capture on stable targets

TJ^{π} perhaps means 2 L J^{π}

19th meeting – 2011 – indc-nds-0595 Resonance/Isomer $t_{1/2}$

2. A revised policy for inclusion of p resonances in ENSDF was presented by Balraj Singh, and adopted. While coverage for n resonance was left to the evaluators' judgment, primary transitions from the thermal-n capture state will be included in the Adopted dataset. – page 32

https://www-nds.iaea.org/nsdd/presentations%202011/Thursday/Singh_Res_data_policy_NSDD11.pdf

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4. Members of the international network of NSDD evaluators agreed to adjust the lower limit of the half-life of a level to be considered an isomer. The current lower limit of 0.1 s was judged to be too high. Therefore, in line with NUBASE, attendees agreed to adopt a lower limit value of 100 ns . – page 33

In NDS General Policies – Jan, 2020: Isomeric limit remains as T≥0.1 s

20th meeting – 2013 – indc-nds-0635

Resonance

1.) Charged-particle and neutron resonance data (B. Singh) - p 25

It was decided that the General Policies would be modified to take into account the decisions taken in previous USNDP and NSDD meetings regarding coverage of charged-particle and neutron resonance data.

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21st meeting – 2015 – indc-nds-0687

Horizontal evaluation and $t_{1/2}$

5.4. Proposal to include horizontal evaluations in adopted data sets (P. Dimitriou and B. Singh) – page 26

Several actions were agreed upon during the discussion of this proposal:

Action on Tuli: all horizontal evaluations to be made available to evaluators in a single location.

Appendix: GUIDELINES FOR ENSDF HALF-LIFE EVALUATIONS (GROUND STATES AND LONG-LIVED ISOMERS) – page 41

A.L. Nichols (University of Surrey, UK), B. Singh (McMaster University, Canada)

Final Document adopted at the 21st NSDD Meeting, 20-24 April 2015, IAEA, Vienna.

22st meeting – 2017 – indc-nds-0733

Year/Gamma record

4. DEDICATED SUBCOMMITTEE MEETINGS – page 13

4.1. Policies and Procedures Subcommittee

5. Adopt Tropical year to define the days in one year → Tropical year = 365.24219 d. An Action was placed on NNDC-BNL to ensure that tropical year is implemented in all relevant nuclides (see Annex 4, Action #34).

8. A2, A4, DCO and POL should be placed in the 2G record, and both DCO and POL need to be accompanied with explanations for their adoption. Action placed on NNDC-BNL to provide a list of the quantities that can be included in the 2G record and to ensure FMTCHK recognizes POL (see Annex 4, Actions #38, 39) - page 14

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Thank you