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Information

KERNFORSCHUNGSZENTRUM · D-7500 KARLSRUHE · POSTFACH 3640 · TELEFON 7826-484

Memo CP-B/6

15.2.1977

Subjects: EXFOR Manual Revisions and Dictionaries

References: CP-D/13; CP-D/15; CP-D/16
CP-D/17

EXFOR Dictionary updates 761229 and 770114

Additions to Dictionaries

With respect to the two EXFOR-Manual- and LEXFOR-revisions (CP-D/13 and CP-D/15) we give the following comments and proposals, which are referred to the respective changed or inserted pages:

p.II.7 (2.sect.): "The first field (Col. 67) is alphameric, the next 3 fields (Cols. 68-79) are strictly numeric ..."

p.III.1 (2.sect.): We found no hint that others than the DATA-system identifier can be combined with the modifier X. If this is true, it should be stated explicitly. Otherwise, explanations and examples in the respective sections (p.III.3 ff) are missing.

(last line): We cannot see, which kind of coded information could be given in Cols 34-66 of a system identifier record, except of centre-internal information. If this is meant, the example should be altered accordingly.

p.III.3 (item 1.): There is missing an explicit statement on the length of field N_3 . Shall it cover Cols. 34-66 or the usual 11-digit length only?

(item 2.): The procedure given in the 'note' is not applicable to KACHAPAG-files, since they will contain in the future entries originating from other centres, too. Therefore, the ENDTRANS-record of all our

centre-to-centre transmission tapes must contain a centre identification code which sorts at the end of the entire file. We will, therefore, use in the future the code Z999 for the ENDTRANS-record.

p.IV.1 (item (2),2.sect.): A listing of those keywords should be given, for which a restriction for the maximum length of machine retrievable information exists. Such a listing would be very helpful if new codes are introduced.

p.IV.2 (item (3)): Please insert in the 3. line:

".... retrievable information (for formalism see (4) below)."

(item (4)A.,2.option): We would prefer a clear statement, whether codes are expanded or not using this option, instead of the weak expressions: ".... is not supposed to be expanded ..." or "may as well be suppressed ..."

pp.IV.3/3a (2.sect.): Please insert:

"1.) multiple iso-quants (s.p.VIII.15) and reactions (s. page VIII.20c)"
and

".... ANALYSIS, COMMENT etc. to one of the multiple iso-quants or reactions or to ..."

(examples 3./4.): We propose to combine examples 3. and 4. to a more general case including all possibilities, e.g. in the following way:

3.) pointers linking pieces of BIB-information to each other and/or to the respective DATA-columns describing different results for the same quantity but all referring to the same REACTION.

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Example: REACTION  (.....)
          METHOD    1(.....) free text
                2(.....) free text
          PART-DET  1(.....)
          RAD-DET   2(.....)
          DECAY-DATA 2(.....)
          DETECTOR  1(.....)
                2(.....)
          COMMENT   1 free text
                2 free text

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formalism of item 10.p.VIII 20b, e.g. (Z-S-A(P,T+X) for triton emission, is preferred.

If this is accepted, item 2. on page VIII.20a should be supplemented as follows:

"In cases of complex reactions, where a lighter product was measured, always that product should be coded in SF 4 to which the quantity given in the DATA-section (and specified in REACTION SF 6) refers (e.g. (Z-S-A(P,X)4-BE-7, for BE-7 emission cross sections). For particles equal or lighter than alphas the formalism of item 10. page VIII.20b applies."

Consequently, it should be added to the 1. example of item 10. on page VIII.20b:

"For emission of particles heavier than alpha see item 2. on page VIII.20a."

p.VIII.20b ("quantity") Change everywhere "quantity" to "describing parameters" and "parameter" to "quantity given" (cf.p. VIII.1)

("branch") The explanation is not quite clear.

We propose the following:

"A code in the "branch" subfield indicates, whether the reaction considered is partial (and with respect to which quantity) or total. In a partial reaction only the population of a specific energy level, e.g. ground or metastable state, has been considered (cf. LEXFOR under CROSS-SECTIONS and Dicts. 31,36)."

("parameter") Please change to "quantity given"

General remark: In all these explanations to the different subfields more cross-references should be given not only to dictionaries but also to subject-headings in LEXFOR (e.g. CROSS-SECTION) where the applicability of single or combined codes is specified.

("particle considered") Please change in the last line:

".... this subfield will usually be empty."

(last section) This section should be headed by "describing parameters". The following statement should be added:

"If more than one code is given in a subfield (separated by a slash), the combination must be given in the sequence listed in Dictionary 36."

p.VIII.20c (REACTION Combinations) Please add the following rule:

"In the case of natural isotope mixtures, however, the formalism (Z-S-O(P,X)Z'-S'-A,) is obligatory if reactions with more than one of the target isotopes contribute to the given end product".

(Multiple REACTIONS) Please add:

"Note: In the case of isomeric branches it must be clearly distinguished between the sum-coding and the usage of the "branch" code M+.

The sum-coding

((Z-S-A(,)Z-S-A-M,...) +
(Z-S-A(,)Z-S-A-G,...))

is used only in cases where the total formation cross section $\sigma_M + \sigma_G$ was obtained from separate measurements. If only the activity of the ground-state was measured which includes the feeding from the metastable state via the isomeric transition, the branch code (Z-S-A(,)Z-S-A,M+,...) is applied.

Accordingly, $(\sigma_M + \sigma_G)$ is greater or equal to $(\sigma, M+)$.

Exception: In cases where the formation cross-section of a nucleus is determined from a daughter activity ensuring a 100 % inclusion of the produced isomer, the sum-code must be used, since the branch-code M+ stating formation via isomeric γ -transition in the residual nucleus does not apply unambiguously to this case.

(see Dict. 31; LEXFOR under CROSS-SECTIONS, ISOMER)"

This explanation should also be added in LEXFOR under the subject-heading CROSS SECTIONS.

(MONITOR) The accession-number of a monitor reaction should be given, whenever possible (not: "may be followed ..."), the author and the reference are obligatory.

Because a great effort is necessary to add this accession number later on, it is recommended to compile monitor reactions immediately after they occurred.

Please change "coeded" to "coded".

p.VIII.24 ("HALF-LIFE") A reference to the following keyword

"DECAY-DATA" is missing, which points on the mutual applicability.

In the last sentence a LEXFOR-keyword "Delayed Fission Neutron Data" is mentioned (as well as in LEXFOR under NEUTRON YIELD), which we did not find in LEXFOR.

Please insert after the 1. section of "DECAY-DATA":

"In cases where unresolved doublets (or multiplets) of γ -rays were used in the publication, the energies of all involved γ -rays should be given, separated by a slash. If only two energies are given, this can also mean the borders of an energy range containing all (unresolved) γ -rays which were used for analysis on the whole.

Example:

DECAY-DATA (Z-S-A,T.HRS,DG,E₁/E₂,I₁₂)

Here I₁₂ means the total abundance of the two γ -rays E₁ and E₂, or of all γ -rays lying in between the limits E₁ and E₂, respectively."

We do not see why the keyword HALF-LIFE is obligatory, when half-life values are contained as a variable in the DATA section. Also in this case, a coding under DECAY-DATA (if necessary, by use of pointers) seems to be unambiguous.

p.IX.5 In items 3) and 4) the respective CP-procedure should be mentioned.

Changes to LEXFOR

CROSS-SECTIONS: Please add the explanation of the difference between the sum-code ((Z-S-A(,)Z-S-A-M,...) + (Z-S-A(,)Z-S-A-G,...))

and the branch code (Z-S-A(,)Z-S-A,M+,...) as given in the note on page 5 of this MEMO.

DATA-SPEC.: (2. sect. under NUC-QUANT) Correct NU-QUANT to NUC-QUANT.

FISSION: (2. line) "... have A > 6".

General remark: This definition of fission seems questionable. If fission is defined in this way, how would one define spallation or fragmentation? Please refer to Memo CP-B/5 (item 1), where we have discussed explicitly the proposal of CP-D/11 and its consequences. Please, refer also to Memo CP-B/5 regarding the codes FP resp. FF.

ISOMER: (item 1) In our opinion there do not exist "unspecified metastable states". Every isomer for which data are given in a subentry, must be specified unambiguously, e.g. by its decay properties given under the keyword DECAY-DATA (cf. Memo CP-B/1 and sect. 3 of this LEXFOR-item "ISOMER"). Therefore, we propose the following change and addition:

"95-AM-242-M isomer code used, if only one isomeric state is regarded in the publication.

In all cases an unambiguous identification of the respective isomer, e.g. by its half-life and/or other decay properties (given under DECAy-DATA) is obligatory."

In Memo CP-B/5 we proposed under the column heading ISOMER the numerical code

"9 for groundstate including isomeric transition
corresponding to the long form (Z-S-A(,)Z-S-A,M+,...)"
which should be included here.

The reference to Dict. 24 and the entry in this dictionary are missing.

(item 3, 3.line) Please change: "... compilers should include ..."
to "... compilers must include" (cf. comment to item 1 above).

LIGHT-N: Shall the former tables of light-nuclei reactions be omitted?
The keyword "Particle-out Reactions" is not contained in LEXFOR.

NEUTRON-YIELD: The keyword "Delayed Fission Neutron Data" is not contained in LEXFOR.

RESID: The reference to "Fission" for special rules of coding the residual nucleus does not consider the comments of Memo CP-B/5.

To Memo CP-D/16:

Item 4 (Subentries 14,16,27,30) Since we had meanwhile noticed this mistake and corrected it in these 4 subentries as well as in several following subentries, please change back the correction of Dict. 36 to the former version, i.e. IND/M+, SIG.

Item 7 (Entry B 0020) See our proposals concerning unresolved γ -rays under the keyword DECAy-DATA in the present Memo.

The other mistakes have been corrected, and the corresponding changes will be contained in the next trans-tape.

To Memo CP-D/17

The proposal is accepted. However, the Dict. 1 update is missing.

TO EXFOR Int. Dict. Update 761229/770114

General remark: We cannot reproduce the accession-number counting of many of the changed or inserted records. Please check the numbers once more.

Line:

- 0200084C change "PARAMETER" to "QUANTITY GIVEN"
- 0200085C change "PARAMETER" to "QUANTITY GIVEN"
- 0200087I change "QUANTITY" to "DESCRIBING PARAMETERS"
- 3200001C change "PARAMETER" to "QUANTITY GIVEN"
- 0300079I delete this code, since due to telex of C. Dunford Carnegie-Mellon University is identical to Carnegie Inst. of Technology, coded by 1USACAR. Instead, this entry should be expanded to

1USACAR (CARNEGIE INST. OF TECHNOLOGY, NOW: CARNEGIE MELLON UNIVERSITY, PITTSBURGH, PA.)
- 0700694I the position of this insertion is completely unclear.
- 2500007I change NUCLEUS to NUCLEI
- 3600198I this code should not be inserted under "ternary fission" but under "Special quantities for fission". The accession number may be, therefore, 158I and not 198I
- 3600039I the old code sequence should be kept.
- 39D (see comment to Memo CP-D/16 above)

Update 770114:

- 0100034C } The "counting of pointers" together with keywords in
- 0100034I } BIB-Sections is unclear.
- 0100047C the point at the end of the line is abundant
- 3600194I the block "Special Emission Quantities" should be
- inserted before the block "Special Quantities for Fission", because
- the total block describing Fission should not be splitted up.

Additions to Dictionaries

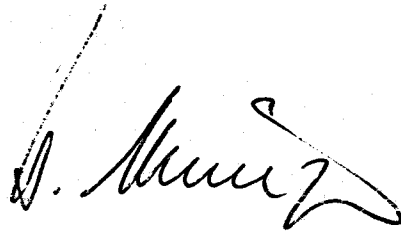
Dict. 2

- REL-REF
SF3 to 7 or 8 REFERENCE IN SAME FORMAT AS UNDER REFERENCE
Last SF EXFOR ACCESSION NUMBER OF REFERENCE
- DECAY-DATA
SF4 ENERGY OF RADIATION IN KEV. FLOATING POINT NUMBER.
IN CASE OF SEVERAL UNRESOLVED GAMMA-RAYS THE VALUES
OF - AT LEAST - THE LOWEST AND HIGHEST ENERGY ARE GIVEN
SEPARATED BY A SLASH.

SF5 ABUNDANCE OF OBSERVED RADIATION (E.G. PHOTONS) PER DECAY.
FLOATING POINT NUMBER. IN CASE OF UNRESOLVED MULTIPLETS THE TOTAL
ABUNDANCE OF ALL CONTRIBUTING TRANSITIONS MUST BE GIVEN.

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