Memo CP-D/129

1984-07-17

To: Distribution

From: O. Schwerer and H.D. Lemmel

Subject: Comments on TRANS-M003

TRANS-M003 was checked at NDS. Some corrections were made, these are listed in Annex 1.

The data coded require some additional coding rules. We submit some proposals as given in Annex 2. +)

For some new quantities we would like to request CDFE to formulate definitions to be included in LEXFOR. Such definitions are needed for the items given in Annex 3. +)

Annex 4 lists items where further clarification by CDFE is required.

TRANS tape M003 as corrected at NDS is transmitted to the other centers as usual. For several entries, however, further clarifications and retransmissions will be required.

We apologize for the delay in processing this TRANS tape.

Clearance: for J.J. Schmidt

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+) PS: The proposals (compare Annex 2) will be discussed at the Technical NRDC-Meeting in September 1984. Additional proposals (compare Annex 3) should be submitted by CP-Memo as early as possible so that they are available in time for the NRDC Meeting.

Annex 1
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M0027
Subentries 2,3,4: the REACTION coding
((11-NA-23(G,N)11-NA-22,,DA/DE,,REL,EXP)+
(11-NA-23(G,P)10-NE-22,,DA/DE,,REL,EXP))
with the explanation in the COMMENT that gamma-spectra of the (,x ') reaction are coded, is inappropriate.
The REACTION code should be
(11-NA-23(G,X)0-G-0,,DA/DE,,REL,EXP)
or (less preferably)
((11-NA-23(G,N)11-NA-22,,DA/DE,G,REL,EXP)+
(11-NA-23(G,P)10-NE-22,,DA/DE,G,REL,EXP))
if only these 2 reactions contribute to the measured spectrum.
The code 'G' in SF7 (particle considered) is necessary because without it, the double diff.cross section refers to the outgoing neutrons (protons) instead of the gammas.
Subentry 5: For the same reason, the REACTION should be
....,PAR,DA,G,,DERIV).

M0030
Subentry 2: REACTION: add 'particle considered' D
Subentry 3: REACTION: add 'particle considered' P
Subentry 4: REACTION: add 'particle considered' N
The code combinations ,DE,D and ,DE,P will be added to Dictionary 36.

Subentries 8-12: the REACTION ....,,DA/DE,,REL,EXP should rather be
.....,PAR,DA,,REL,EXP
This would also require an entry under EN-SEC using a new formalism, (see Annex 2):
EN-SEC (E1) TOTAL KINETIC ENERGY OF THIS PAIR

M0033
All subentries: REACTION must be PAR,SIG because E1 is given.

M0035
Subentries 11-19: Angular correlations given. IN SF6 'DA' should be replaced by 'COR'.

Subentries 24-27: coding should probably read everywhere
.....,DE,D,REL,EXP

M0036
Subentries 2-4: 1) SF6 should probably be TTY/DA rather than PY
2) MISC as independent variable should probably be replaced by THICKNESS

Subentry 14: ...,PY/DA,,REL,EXP should probably be ...,TTY,,REL,EXP (no angle given)

M0039
Subentry 8: REACTION ...(G,N) should read (G,P)

M0043
Subentry 17-23: ....PAR,DA/DE,,,DERIV should be ...PAR,DA,,,DERIV because the units are MB/SR.

M0044
Subentry 16-23: same as M0043.017-23 above.

M0045
Subentries 17-24: same as M0043.017-23 above.

Annex 2
****

1. Pair production (M0032, M0029)
   All subentries of entry M0032 have the REACTION
   6-C-12(G,INL)6-C-12,PAR,DA,,REL,EXP
   which is correct for photon angular distributions. However, the COMMENT in subentry 1 says: "The angular distributions of electrons and positrons have been measured for pair production on C-12..."
   This requires a new code to be proposed, e.g. something like
   6-C-12(G,PAIR)6-C-12,PAR,DA,E,REL,EXP
   or perhaps
   6-C-12(G,E+POS)6-C-12,.....
   with a new code POS for positrons which could be used also in SF7 if needed.
   Similar coding could also be used in etry M0029.
   Since NDS has no experience in pair production data we would like CDFE to propose a formalism they prefer.

2. Energy correlations (M0030.005-007, M0035.002-010,020,021)
   As the code COR in REACTION SF6 is reserved for angular correlations and DE for 'ordinary' spectra, we propose
   ECO for energy correlations.

3. Under the BIB keyword EN-SEC it should be permitted to give explanation in free text only if none of the available particle or nuclide codes applies. Example:
   EN-SEC (E1) RELATIVE ENERGY OF P-N PAIR
   (M0030.005-012, M0033, M0035.020-023)

4. It should be discussed whether the use of the heading
MOMENTUM L to define a level of the residual nucleus (and a partial cross section) is legal. (M0040.003,004)

Annex 3

****

May we ask CDFE to provide definitions to be included in LEXFOR for the following quantities found in TRANS M003. Such definitions should provide

- that other EXFOR compilers use these codes with exactly the same meaning
- that EXFOR users understand the correct meaning of the data.

1. Definitions are required for all correlation quantities, including angular, energy and momentum correlations. (Of course, such data may occur also for neutron reactions but were, so far, not coded in EXFOR). See also Annex 2.
   M0035.022,023: momentum correlations. This would require s
   1) a new code in SF6 for momentum correlations
   2) a new heading (Dict.24) for secondary linear momentum
   3) a new units code (Dict.25), because MEV should probably read MEV/C.

2. Asymmetry: M0034
   Subentry 2: 2-HE-4(G,N),,AH,,,EXP
   "photoneutron asymmetry factor"
   Subentry 3: 2-HE-4(G,P),,AH/DE,,,EXP
   "photoproton asymmetry factor"
   1) What is AH exactly? Please compare existing codes for polarization,asymmetry etc. If they cannot be used for these data, please propose new code(s) with appropriate explanations for LEXFOR.
   2) What is the difference between AH and AH/DE ?

3. In the following subentries the definition of the quantity needs clarification.
   M0035.028-032: Explanation of quantity?
   M0037
   Subentry 2: Unusual type of coefficients
   Subentries 4-6: unusual partial cross section, defined in COMMENT only.
   M0038
   All subentries: 'Asymmetry function' given. Probably new coding to be proposed.
   M0039
   Subentries 3,4: unusual partial cross section defined only in COMMENT.

Annex 4
****

General
****

1. The existing correction flags ('C' in col.80) are inconsistent with the entries under HISTORY. In fact, since none of the entries of this TRANS has ever been retransmitted, no correction flags should occur.

2. The exact definition of the quantity measured is, in most cases, given in free text using the keyword COMMENT. If free text is needed to define the quantity, this should be done under the keyword REACTION following the coded information. The keyword COMMENT should only be used if no more specific keyword applies.

Questions on specific entries
****

M0027
No EN (incident photon energy) given in subentries 2,3,4.

M0028
Subentries 5,6,7: The COMMON section gives EN-MAX and the DATA section EN. This is illegal and in some cases contradictory (some values of EN are greater than EN-MAX). EN,EN-MIN, EN-MAX is always the incident gamma energy. Perhaps EN-MAX is meant to refer to the secondary (scattered) gammas? Then it must be changed to E-MAX.

M0036
Whole entry: EN missing
Subentries 5-7: Under EN-SEC, E1 is defined as energy of the incident electron beam (no EN is given). EN-SEC and E1 must never refer to incident energies. Rather, this should be transformed into an (at least approximate) value for the incident gamma energy and be coded as EN or EN-MAX or EN-APRX.

Subentries 8-13 should probably be combined into 1 subentry, because 1 thickness value in arbitrary units in the COMMON section makes little sense.This should be an independent variable in the DATA section which can be repeated if necessary:

```
BIB
REACTION      (82-PB-0(G,N),,PY/DA,,REL,EXP)
ENDBIB
NOCOMMON
DATA
THICKNESS  ANG          DATA
ARB-UNITS  ADEG         ARB-UNITS
   1.        30.          6.3
   1.        45.          4.9
 ......    ......        .....
   1.       161.          2.5
   2.        30.         15.
   2.        90.          9.
   2.       150.          8.
   3.        28.         21.1
   3.        91.         16.4
   3.       151.         11.7
              etc.
```

In addition, the quantity should perhaps be PY/DA rather than DA since it is dependent on thickness.

Subentry 14:
E1 = 'energy of incident electron beam': same as in subentries 5-7

Annex 1
****

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