WP 2003-14

New coding for REACTION SF7 (particle considered)

Attached: CP-C/315, CP-D/354, CP-D/350, CP-E/017

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Memo CP-C/315

DATE: January 31, 2003
TO: Distribution
FROM: V. McLane
SUBJECT: Reaction Field Particle considered (SF7)

For complex quantities for which, *e.g.*, the secondary energy given is for the relative motion between two particles, or the angle is given for the center-of-mass of two particles, a new way is needed to specify the particles considered. Consider for example data set E1748 (TRANS E021). The triple differential cross section is given for the angle of the outgoing tritons and alphas and the energy for the relative motion between the triton and the alpha. (Many other similar cases have been reported).

I propose that we introduce the separator dash (-) to indicate the correlated particles. For the above case, the quantity would be coded as: (……..DA/DA/DE,A/T/A-T)

This might require some retrofitting of previously transmitted entries, but I am willing to look into and report on those, if this proposal is accepted. It would also require updating any codes that parse the REACTION string.

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Memo CP-D/354

Date: 18 February 2003

To: Distribution

From: O. Schwerer

Subject: 1) Dictionary 18 code PRJFS
2) REACTION SF7

Reference: Memo CP-E/017, items 4 and 5

1) I support the proposal to introduce the dictionary 18 code PRJFS (rather than PRJFS2) since we still have the restriction of 5 characters for this dictionary.

2) (See also CP-C/315 and CP-D/350) While I agree with the idea of coding correlated particles in REACTION SF7, it occurred to me that at the 2002 Paris NNDC meeting (Conclusion C20) we allowed nuclide codes in SF7. This means, we might end up with SF7 containing

   ….,DA/DA/DE,N/A/4-BE-9-3-LI-7

   which is rather confusing. Therefore I propose to use another separator for the correlated particles, e.g. a plus sign:

   ….,DA/DA/DE,N/A/4-BE-9+3-LI-7

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Memo CP-D/350

Date: 12 February 2003
To: Distribution
From: O. Schwerer

Subject: Proposed new coding for REACTION SF7 (Particle considered)

Reference: Memo CP-C/315 (31 January 2003)

I agree with the proposal in CP-C/315. However, some additional clarifications and additions (including LEXFOR) will be required, in particular:

When referring to secondary energies:

The correlated particles need to be given also under EN-SEC. In the example of CP-C/315, this would be
EN-SEC (E,A-T)

When referring to angles of secondary particles:

Will this new formalism also apply to the existing data on angular correlations and/or correlated particle pairs (as given in LEXFOR under "Correlations")? Even if the answer is negative, LEXFOR should explain where this new formalism is to be used, and where it isn't. This update should go together with the clarification requested earlier for the definitions and coding rules for angular correlations (pending Action A32 of the 2002 NRDC Meeting), i.e. definition of angular correlation vs. angular distribution of correlated particle pairs, units to be used, number of angles to be given).

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Memo CP-E/017

Date: February 3, 2003
To: Distribution
From: OTUKA Naohiko and KATŌ Kiyoshi
Subject: Reply to CP-C/313, 314, 315 and NNDC's comments on PRELIM.E021, CP-E/013, 016

thank you very much for Vicki's carefully checking and giving useful comments and suggestions to help our compilations of PRELIM.E021. The following is reply for them:

1. Longitudinal momentum LP (CP-C/313)

We are satisfied with Vicki's proposals CP-C/313 1)-3).

2. Elementary particle production cross sections (PRELIM.E021.E1706, E1711, CP-C/314)

The preliminary E021 includes elementary particle production cross sections for anti-proton (in E1706) and positive kaon (in E1717). CP-C/314 proposes the following compilation for them:

REACTION (6-C-0(D,X)1-AP-1,,DA/DP)	E170600600003
REACTION (6-C-0(KN,X)0-KP-0,,DA/DP)	E171700200003

The expression for anti-proton looks good, while we prefer to use 1-KP-0, where we suggest *Z* would be the absolute value of electric charge. We also propose that *A* denotes absolute value of baryon number (this with the example of CP-C/314). We hope to have more discussion for K^+. We withdraw E1717 from final TRANS.E021 and wait a conclusion of High Energy Working Group).

3. Angular range codes: ANG1-MIN, ANG1-MAX... (PRELIM.E021.E1711, CP-E/013)

Vicki proposed to treat these angular ranges as additional information on 16 December. In the present paper (W.Q.Shen et al., Phys.Rev.C**56**(1997)1996, compiled as E1711 in PRELIM.E021),

1) Two polar angular ranges for two protons, 10 deg<θ<160 deg, would rise from the limitation of measurement technique, which cannot cover most forward and backward direction;

2) The authors would not expect that this theta range affects current experimental azimuthal angular correlations.

So we conclude that these polar angular ranges can be treated as additional information. We also withdraw CP-E/013 which proposed new codes ANG1-MIN, ANG1-MAX, ANG2-MIN and ANG2-MAX.

4. Beam from projectile fragment separator: PRJFS (PRELIM.E021.E1721, CP-E/016)

In CP-E/016, we proposed new codes PRJFS (Secondary beam from projectile fragment

separator) which is used in E1721 of PRELIM.E021. Vicki's counterproposal is PRJFS2. The last 2 probably expresses "secondary". It seems to be good. But now the length of code in Dict.18 (Facility) is limited to be less than 5. So now I propose to use PRJFS again if there is no other proposal.

5. Reaction field particle considered (PRELIM.E021.E1748)

We support Vicki's proposal for the expression of correlated particles in SF7. The following is a coding example for PRELIM.E021.E1748.020 using the proposal:

(DA/DA/DE,A/T/A-T or DA/DA/DE,T/A/T-A ?)

```
SUBENT        E1748020   20021202                                  E174802000001
BIB                 7         23                                  E174802000002
REACTION   (30-ZN-64(3-LI-7,T+A)30-ZN-64,,DA/DA/DE,A/T/A-T)       E174802000003
           DATA: triple differential cross section with respect   E174802000004
                 to kinetic energy and angle for relative motion  E174802000005
                 between alpha and triton, and angle for motion   E174802000006
                 of the center of mass of the 7Li(=alpha+triton)  E174802000007
                 system                                           E174802000008
PART-DET   (A)                                                    E174802000009
           (T)                                                    E174802000010
…
EN-SEC     (E,T/A)kinetic energy for relative motion between      E174802000017
                  alpha and triton, positive (negative) energies  E174802000018
                  correspond to the branch where velocity of      E174802000019
                  alpha is larger (smaller) than that of triton   E174802000020
           ANG1 is polar angle between beam and alpha             E174802000021
           ANG2 is polar angle between beam and triton            E174802000022
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