Partial cs for production of specified number of product particles

Attached: CP-C/318, CP-D/359

Subentry A0361.002 compiles partial cross sections for the production of a specifies number of heavy product particles from the reaction U-238 nicident on Au-197 at 3850 MeV.

After some discussion, NNDC and NDS agree on proposing the following coding:

```
(79-AU-197(92-U-238,X)NPART,NUM,SIG,FF)
```

(in units MB or equivalent), with `PART-OUT` as independent variable.

NPART replaces the reaction product in SF4 (cannot be blank if SF3 = X) and links the REACTION codes to the independent variable PART-OUT. NUM in SF5 indicates that this is a partial cross section (for each of the values of PART-OUT; their sum may be equal the total cross section). SF7 (in this case FF) may be used to define particles considered.

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Memo CP-C/318

DATE: February 12, 2003
TO: Distribution
FROM: V. McLane
SUBJECT: Reply to Memos CP-D/358 and CP-D/359

Memo CP-D/358 (Differential by number of prompt neutrons.

Memo CP-C/359 (Partial cross section for production of a specified number of product particles)

I like the addition of NUM in SF5. However, I prefer the more generic code for SF4; the exact particle can be specified in SF7 as is now the practice, e.g., ……)NPART,NUM,SIG,HF. Otherwise we will eventually need more codes for SF4 (LFRAG, LCP, HCP).

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Memo CP-D/359

Date: 10 March 2003
To: Distribution
From: O. Schwerer

Subject: **Partial cross section for production of specified number of product particles**

Reference: Subentry A0361.002 (TRANS A054) and related comments

In this work, partial cross sections for the production of a specified number of heavy product particles from the reaction U-238 incident on Au-197 at 3570 MeV are measured.

In subentry A0361.002 (on TRANS A054) this is coded as

```
(1)     (79-AU-197(92-U-238,F),,SIG/DN,FF)
```

with PART-OUT as independent variable and DATA in units MB/PRT.

In V. McLane's comment on TRANS A054 it is mentioned that
- SIG/DN is not appropriate because DN stands for "differential with respect to number of outgoing neutrons" while here all (heavy) product particles are included, and
- SF3 = F (fission) is not appropriate because according to the publication, not only fission is included,

and a new way of coding was proposed:

```
(2)     (79-AU-197(92-U-238,X)NPART,,SIG)
```

(to be given in units MB), introducing a new code NPART for SF4.
(Note that there is no dictionary for SF4. Like ELEM and MASS, such special codes need to be hard-wired into all relevant programs.)

While I agree that the original coding needs to be replaced by something new, I am not happy with using the simple quantity (REACTION SF5-8)
,SIG (dictionary 36 entry for a straightforward cross section)

because we have here a partial cross section with an additional independent variable (PART-OUT). Since the checking programs check the consistency of quantities, variables and units based on dictionary 36 (which does not include SF4), I prefer a solution with a new code not only in SF4 but also in SF5 and/or SF6, to enable proper checking. For example:

(3) (79-AU-197(92-U-238,X)HFRAG,NUM,SIG)

NUM and NUM,SIG, respectively, would be added to **dictionaries 31** and **36** as "partial cross section for production of specified number of product particles".

Also, I propose to replace NPART by HFRAG (for heavy fragment) to indicate that these are not e.g. neutrons or protons which would be coded with a proper nuclide code.

In any case, any new special code for SF4 (such as NPART or HFRAG) will have to be added to the EXFOR Systems Manual (Chapter 7 on REACTION, Section on Reaction Product).

There might be still other, perhaps better ways of coding such data. Please give your feedback.

Addition to WP 2003-16

MEMO CP-A/138

7-May-2003

To: **Distribution**
From: **F.E. Chukreev , S.Babykina**
Subject**: Modify the definition SIG/DN and DN in dictionaries 36 and 32**

We are suggest to change the definition of '**SIG/DN**' and '**DN**' in dic.36 and 32.

SIG/DN	**(cs differential by number of outgoing particles)**
DN	(**differential with number of outgoing particles**)

It will permit to compile a lot of paper without input new codes in dic.36 and 32, which has been proposed for A0361 (See action 35, meeting 2002) and O0939 (see CP-D/359) and lot of other.

On last Paris meeting after discussion of WP12 , Action 35 was accepted where SIG/DN code has been recommended to use for data from Entry o0939.

Therefore, we do not see needed to input new codes NPART etc (See Memo-CP-D/359) for SF4, if the definition code DN will be modified.