Memo CP-E/074

Date: September 14, 2005
To: Distribution
From: OTSUKA Naohiko
Subject: Multiple reaction formalism

We are restricting quantities which may be coded using multiple reaction formalism to the following 5 cases (see LEXFOR "Multiple reaction formalism"):

1. Resonance parameters of the same isotope and target, determined in the same analysis
2. Multiple representations of the same data:
3. Partial cross sections of a sum reaction

   a) Isomer data (branches, ratios, *etc*.) of the same reactions.
   b) Compound nucleus and direct interaction parts for the same reactions.
   c) High-energy fission and spallation parts for the same reactions.
   d) Binary and ternary parts for fission measured.
   e) Light and heavy fragment parts for a given fission yield.
4. Data measured simultaneously for the production of specific particles or nuclides
5. Data for the same reaction obtained by different types of analysis

with 3 basic constraints (See System Manual "Reaction specification"):

1. The incident projectile and the target nucleus are constant.
2. Quantities are functions of the same independent variables.
3. Quantities are integrally related to each other.

I propose addition of a new case "Components of a vector or tensor quantity" into above list.

There might be other additional categories of data to which multiple reaction formalism could be allowed. Centres may propose such categories in the NRDC meeting in October.

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Sample of coded entry (E1898.008)

T. Wakasa *et al*., Phys. Rev. C**69** (2004) 044602 Fig.2

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SUBENT        E1898008   20050813                          E189800800001
BIB              5         11                              E189800800002
REACTION   1(1-H-2(P,X)0-NN-1,SS,POL/DA/DE,,D)             E189800800003
           2(1-H-2(P,X)0-NN-1,SL,POL/DA/DE,,D)             E189800800004
           3(1-H-2(P,X)0-NN-1,NN,POL/DA/DE,,D)             E189800800005
EN-SEC     ANG is polar angle between beam and neutron in  E189800800006
           laboratory system                              E189800800007
           (E-DGD,N) Energy transfer from projectile to target  E189800800008
SAMPLE     Target-thickness: 662 mg/cm2 for CD2 and 682 mg/cm2  E189800800009
           for C                                          E189800800010
ERR-ANALYS (ERR-S) Statistical uncertainty                E189800800011
STATUS     (TABLE) Data (Fig.2, p044602-4 in reference) received  E189800800012
           by e-mail from T.Wakasa (2004.05.24)           E189800800013
ENDBIB          11         0                              E189800800014
COMMON           3         3                              E189800800015
EN        E-RSL      ANG                                  E189800800016
MEV       MEV        ADEG                                 E189800800017
 345.0     3.0        16.0                                E189800800018
ENDCOMMON        3         0                              E189800800019
DATA             7        17                              E189800800020
E-DGD     DATA     1ERR-S    1DATA     2ERR-S    2DATA    3E189800800021
ERR-S    3                                                E189800800022
MEV       NO-DIM    NO-DIM    NO-DIM    NO-DIM    NO-DIM   E189800800023
NO-DIM                                                    E189800800024
 20.00     -0.5678   0.0198    0.0207    0.0216    0.0581  E189800800025
 0.0221                                                   E189800800026
 25.00     -0.6348   0.0166    0.0379    0.0181    0.1009  E189800800027
 0.0186                                                   E189800800028
 …
 167.50    -0.2183   0.1384    0.1677    0.1479    -0.2814 E189800800055
 0.1222                                                   E189800800056
 187.50    -0.0478   0.1709    -0.0505   0.1829    -0.0302 E189800800057
 0.1423                                                   E189800800058
ENDDATA         38         0                              E189800800059
ENDSUBENT       58         0                              E189800899999
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