

WP 2005-26

Japan Charged-Particle Nuclear Reaction Data Group

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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.

Sample of coded entry (E1898.008)

T. Wakasa *et al.*, Phys. Rev. C69 (2004) 044602 Fig.2

| | | | | | | | |
|------------|---|----------|--------|---------|--------|----------------|---------------|
| 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 |