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Memo CP-E/047

Date : July 16, 2004
To : Distribution
From : OTSUKA Naohiko
Subject : Probability for emission of N particles, EM/NUM,PY
Reference : CP-A/154, CP-D/400

The authors of O1086 (B. Mukherjee *et al.*) give the probability to find n proton production events in proton production events (Table II and III of the reference). I agree to introduce new code for “Probability for emission of N particles). However proposed dimension (FY) is not suitable. This quantity is now compiled with PC/REAC (= particles in 100 reactions). Can we use this unit for the present measurement? I have similar question for the dimension of PR/NUM, NU for which dimension FY is now assigned.

We must distinguish the case of “probability for emission of N particles” from the case of “probability for production of fission fragment (Z,A)”. For the latter case, % is often used in figures, and we code this probability with “PC/FIS = particles (or product) per 100 fissions”, because always 200 fission fragments are produced in 100 fission events. In the present case (O1086), however, we cannot translate % to “PC/REAC=particle in 100 reactions” for the tables.

Additional questions:

- 1) Now 26-FE-56 (P, X) 1-H-1, EM/NUM, PY is used for O1086.002. Another possibility is 26-FE-56 (P, X) NPART, EM/NUM, PY, P. Which one is preference in our practice?
- 2) How do we distinguish the usage of “, SIG/DN” formalism from “NUM, SIG” formalism? It looks that “NUM, SIG” can always replaces “, SIG/DN”. The first one might have wider applicability.

Concerning O1086 again, we can see the following description in this paper:

“Overall, each measured spectrum is characterized by an exponential line (not shown in the Figures), starting with a huge contribution at multiplicity one, mainly attributed to the elastic contribution for forward angle, while completely non-elastic contribution for backward angle.”

Therefore EM in SF5 in the proposed code is questionable (especially for SALAD detector set at forward angle).

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