

Japan Charged-Particle Nuclear Reaction Data Group

Division of Physics, Graduate School of Science
Hokkaido University
060-0810 Sapporo, JAPAN

E-mail: services@jcprg.org
Internet: <http://www.jcprg.org/>

Telephone +81(JPN)-11-706-2684
Facsimile +81(JPN)-11-706-4850

Memo CP-E/071

Date: June 6, 2005
To: Distribution
From: OTSUKA Naohiko
Subject: Energy spectrum as function of sum of kinetic energies of several particles
Reference: CP-D/434

We have two comments on Memo CP-D/434:

- 1) This is an extension of “Energy distribution for a correlated pair” (LEXFOR Secondary Energy Distributions item.2) to N -particle case, because relative energy E_{rel} is the sum of kinetic energies of two particles in their c.m. system, and M. Meister *et al.* considers the sum of kinetic energies of 3 particles in their c.m. frame (=outgoing ^6He or ^8He rest frame).

Therefore it would be better to keep consistency between two particles case and N -particles case, for example,

- Codes for particles considered (SF7): a+b+... or a/b/...
- Heading for the sum of kinetic energies in their c.m. system: E - CM or E - RL - CM?
(-CM means center of mass system for particles considered, not for projectile-target)

- 2) JCPRG has compiled similar quantity in E1797.002, in which energy spectrum for $^1\text{H}(^{14}\text{Be}, n+p+^{12}\text{Be})n$ is shown for the sum of kinetic energies for $n+p+^{12}\text{Be}$. We converted the sum of kinetic energies to excitation energy of intermediate state (^{14}Be) by adding three-body decay energy to the sum of kinetic energies. This could be another solution for M. Meister *et al.*

Distribution:

S. Babykina, CAJaD	J.H. Chang, KAERI	M. Chiba, JCPRG	F.E. Chukreev, CAJaD
S. Dunaeva, NDS	Z.G. Ge, CNDC	O. Gritzay, KINR	A. Hasegawa, JAERI
H. Henriksson, NEA-DB	A. Kaltchenko, KINR	K. Katō, JCPRG	M. Lammer, NDS
S. Maev, CJD	V.N. Manokhin, CJD	V. McLane, NNDC	M. Mikhaylyukova, CJD
C. Nordborg, NEA-DB	P. Obložinský, NNDC	A. Ohnishi, JCPRG	D. Rochman, NNDC
O. Schwerer, NDS	S. Tákacs, ATOMKI	S. Taova, VNIIEF	T. Tárkányi, ATOMKI
V. Varlamov, CDFE	M. Vlasov, KINR	M. Wirtz, NDS	H.W. Yu, CNDC
V. Zerkín, NDS	Y.X. Zhuang, CNDC	EXFOR, NEA-DB	JCPRG Distribution

Sample of coded entry (E1797.002)

S. Takeuchi *et al.*, Phys. Lett., **B515** (2001) 255 Fig.2.

```
ENTRY          E1797    20041129    E179700000001
SUBENT         E1797001  20041129    E179700100001
BIB            13        52          E179700100002
...
PART-DET       (P)                      E179700100018
               (N)                      E179700100019
               (4-BE-12)                 E179700100020
...
METHOD         (COINC) Detect 12Be, proton and neutron in      E179700100026
               coincidence.                                     E179700100027
               (TOF) To determine velocities of the decay particles E179700100028
FACILITY       (CYCLO,2JPNIPC) Primary beam of 100 AMeV 180 on a 1110 E179700100029
               mg/cm**2 thic 9Be target                        E179700100030
               (PRJFS,2JPNIPC) Secondary beam of 14Be selected by the E179700100031
               RIKEN Projectile Fragment Separator            E179700100032
               (RIPS) [T.Kubo et al., Nucl. Instrum.           E179700100033
               Methods B70(1992)309].                          E179700100034
ANALYSIS       Invariant mass method                             E179700100035
...
ENDBIB         52        0          E179700100055
COMMON         3        3          E179700100056
EN             EN-RSL    E-RSL      E179700100057
MEV/A          MEV/A    MEV         E179700100058
74.            8.       0.15       E179700100059
ENDCOMMON      3        0          E179700100060
ENDSUBENT      59       0          E179700199999
SUBENT         E1797002  20041129    E179700200001
BIB            7        26          E179700200002
REACTION       (1-H-1(4-BE-14,N)5-B-14,,DE) E179700200003
EN-SEC         (E-EXC,5-B-14) Excitation energy of 14B calculated by E179700200004
               E(d) + 16.77 MeV where E(d) is decay          E179700200005
               energy defined in Eq. (1) of the                E179700200006
               reference. Threshold energy is 16.77           E179700200007
               MeV for the 12Be + p + n channel.              E179700200008
MISC-COL       (MISC1) Decay energy E(d) defined in Eq.(1) of the E179700200009
               reference (Total kinetic energies!)            E179700200010
...
STATUS         (TABLE) Data (Fig.2 (a) and (c), p258 in reference) E179700200027
               obtained from web site of S.Takeuchi           E179700200028
ENDBIB         26       0          E179700200029
COMMON         1        3          E179700200030
ERR-1          E179700200031
PER-CENT       10.       E179700200032
ENDCOMMON      3        0          E179700200033
DATA          7        20         E179700200034
E-EXC         MISC1     DATA      ERR-S      MISC2      MISC2-ERR E179700200036
FLAG          MEV       MB/MEV     MB/MEV     MB/MEV     MB/MEV E179700200037
NO-DIM        16.770    0.000      0.000      0.000      E179700200038
1.            1.       E179700200039
16.845        0.075     -0.442     0.442     -0.023     0.023 E179700200040
2.            E179700200041
E179700200042
E179700200043
...
```