

# Japan Charged-Particle Nuclear Reaction Data Group

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## Memo CP-E/021

**Date:** April 19, 2003  
**To:** Distribution  
**From:** OTUKA Naohiko and KATŌ Kiyoshi  
**Subject:** Differential cross section with respect to longitudinal momentum

We are compiling two experiments in which fragment longitudinal momentum distributions are measured from the breakup of secondary beam provided by RIKEN Projectile Fragment Separator - RIPS - (R. Kanungo *et al.*, Phys. Rev. Lett. **88** (2002) 142502 and T. Suzuki *et al.*, Phys. Rev. Lett. **89** (2002) 012501). Fragments  $^{15}\text{B}$ ,  $^{22}\text{O}$  and  $^{21}\text{O}$  coming from  $\text{Be}(^{17}\text{B}, ^{15}\text{B})\text{X}$ ,  $\text{C}(^{23}\text{O}, ^{22}\text{O})\text{X}$ , and  $\text{C}(^{23}\text{O}, ^{21}\text{O})\text{X}$  are detected. In EXFOR, these detected fragments are treated as residual nuclei. We propose the following code for longitudinal momentum distribution for residual nuclei:

### Dictionary 36 (Quantities)

LP, DP, RSD      DP      Differential cross section with respect to longitudinal secondary momentum

Also we need to add some flags for unstable nuclei used as beam and detected as outgoing fragments:

### Dictionary 27 (Nuclides)

5-B-17      Flag 2 at column 14  
5-B-15      Flag 3 at column 15  
8-O-23      Flag 2 at column 14  
8-O-22      Flag 3 at column 15

We attach a coding sample of this quantity.

### **Distribution:**

J.H. Chang, KAERI	M. Chiba, JCPRG	F.E. Chukreev, CAJaD	S. Dunaeva, Sarov
O. Gritzay, KINR	A. Hasegawa, JAERI	K. Kato, JCPRG	M. Kellett, NEADB
M. Lammer, NDS	S. Maev, CJD	V.N. Manokhin, CJD	V. McLane, NNDC
P. Oblozinsky, NNDC	Y. Ohbayasi, JCPRG	N. Otuka, JCPRG	V. Pronyaev, NDS
O. Schwerer, NDS	S. Takacs, ATOMKI	F.T. Tárkányi, ATOMKI1	V. Varlamov, CDFE
M. Vlasov, KINR	M. Wirtz, NDS	V. Zerkin, NDS	Y.X. Zhuang, CNDC

**Sample of coded entry (E1780.002):**

T. Suzuki et al., Phys. Rev. Lett. **89** (2002) 012501 Fig.2 (upper panel)

```
SUBENT      E1780002   20030312                               E178000200001
BIB          6         22                               E178000200002
REACTION    (4-BE-9(5-B-17,X)5-B-15,LP,DP,RSD)           E178000200003
DATA: distribution of 15B longitudinal momentum in the     E178000200004
      projectile rest frame is characterized by a          E178000200005
      FWHM=86+-10MeV/c and 80+-10MeV/c for folding and   E178000200006
      unfolding the system resolution (14MeV/c in 1      E178000200007
      sigma)                                             E178000200008
DATA-ERR: uncertainty (22%) due to normalization          E178000200009
      factor (2 neutron separation cross section)         E178000200010
      is not included                                    E178000200011
MONITOR     experimental data points were normalized to the E178000200012
      measured 2 neutrons separation cross section value E178000200013
PART-DET    (5-B-15)                                     E178000200014
ADD-RES     (COMP)Glauber approximation.(longitudinal momentum
      distribution was calculated by using                 E178000200015
      Eqs.(3.5)-(3.18) in [Y.Ogawa et al., Nucl.Phys.   E178000200016
      A571 (1994)784]. Pure 2s1/2, 1d2/5                 E178000200017
      configuratoins and their configuration mixing      E178000200018
      are considered.)                                    E178000200019
MOM-SEC     (MOM-SEC,5-B-15)longitudinal momentum in the E178000200020
      projectile rest frame                               E178000200021
STATUS      (TABLE)Data (Fig.2-a,p012501-3 in reference) sent by
      author                                             E178000200022
ENDBIB      22         0                               E178000200023
NOCOMMON    0         0                               E178000200024
DATA        3         15                               E178000200025
MOM-SEC     DATA      DATA-ERR                       E178000200026
MEV/C       MB/MEV/C   MB/MEV/C                       E178000200027
-140.0     0.19       0.07                             E178000200028
-120.0     0.17       0.08                             E178000200029
-100.0     0.36       0.09                             E178000200030
-80.0      0.46       0.13                             E178000200031
-60.0      0.64       0.22                             E178000200032
-40.0      1.32       0.31                             E178000200033
-20.0      2.11       0.32                             E178000200034
0.0        1.62       0.3                              E178000200035
20.0       1.52       0.27                             E178000200036
40.0       1.07       0.28                             E178000200037
60.0       0.64       0.24                             E178000200038
80.0       0.2        0.16                             E178000200039
100.0      0.37       0.1                              E178000200040
120.0      0.18       0.06                             E178000200041
140.0      0.18       0.06                             E178000200042
ENDDATA    17         0                               E178000200043
ENDSUBENT  44         0                               E178000299999
```