Japan Charged-Particle Nuclear Reaction Data Group

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

E-mail: nrdf@jcprg.org
Internet: http://www.jcprg.org/

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

Memo CP-E/049

Date: August 20, 2004
To: Distribution
From: OTSUKA Naohiko
Subject: Angular distribution data
Reference: CP-C/346

I have three comments on CP-C/346:

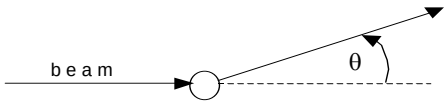
1. Data heading for azimuthal angle:

If we limit the use of `ANG-AZ` to "Azimuthal angle between reaction planes of two particles", `ANG-AZ-RL` or `ANG-RL-AZ` may be better than `ANG-AZ`.

2. Unit for relative angular distribution:

In general, relative data must be combined with `ARB-UNITS`. The following correction may be needed:

Angular distribution: probability for a particle to be emitted into an area of solid angle dΩ lying at a mean angle of θ to the incident beam direction in the reaction plane; given as $\sigma(\theta) = d\sigma/d\Omega$. The data are given in units of cross section per unit solid angle (*e.g.*, mb/sr).



REACTION coding: DA in SF6.
Units are of the type DA (*e.g.*, B/SR)

Data may also be given as relative angular distribution $W(\theta)$; the data are dimensionless, and are most often normalized to W(90°) = 1.

REACTION coding: DA in SF6; REL in SF8.
Units are ~~NO-DIM~~ ARB-UNITS.

3. Relative angular correlation: "`,DA/DA,,REL` "or "`,DA/CRL`" ?:

So far, I understood the difference between "`,DA/DA`" and angular correlation "`,DA/CRL`" is in their normalization, namely, absolute value σ (θ_a, θ_b) or relative value (incl. count) $W(\theta_a, \theta_b)$. `DA/DA` has not been connected with `REL` (only one exception is T0224).

This time V. McLane proposes the use of "`,DA/DA,*,REL`" (relative angular correlation in her draft) for M0469.003, M0627.003-004, O0460.010-011. Does CP-C/346 propose replacing "`,DA/CRL`" by "`,DA/DA,*,REL`" for the data which are differential with respect to two angles? I prefer this solution, and propose the following addition into her draft:

Angular correlation: probability that, if a particle *a* in emitted at a mean angle of θ_a to the incident beam direction in the reaction plane, particle *b* will be emitted at a mean angle of θ_b to the incident beam direction in the same plane (coplanar); given as $d^2\sigma/d\Omega_a d\Omega_b$. The data are given in units of cross section per unit solid angle squared (*e.g.*, mb/sr^2).

…

REACTION coding: DA/DA in SF6; particles in SF7 as *a*/*b* (*e.g.*, P/D).
The angles θ_a and θ_b are coded under the headings ANG1 and ANG2, in the same order as the particles appear in SF7.
Units are of the type DA2 (*e.g.*, MB/SR2)

Data may also be given as relative angular correlation $W(\theta_a, \theta_b)$;.

REACTION coding: DA in SF6; REL in SF8.
Units are ARB-UNITS.

If CP-C/346 is accepted, the use of "`,DA/CRL`" is strictly limited to the quantities which refer only one angle with respect to particle pair (i.e. mean angle of two particle θ_m , relative angle between two particle θ_{rel}). Therefore updates will be necessary for many "`,DA/CRL`" entries in our present database.

By the way, what is the difference between "`,DA/CRL`" and "`,DA/CRL,,REL`" in present rule? I found the latter quantity codes in some entries.

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
A. Kaltchenko, KINR	K. Katō, JCPRG	M. Kellet, NEA-DB	M. Lammer, NDS
M. Lammer, NDS	S. Maev, CJD	V.N. Manokhin, CJD	V. McLane, NNDC
M.Mikhaylyukova, CJD	C. Nordborg, NEA-DB	P. Oblozinsky, NNDC	A. Ohnishi, JCPRG
O. Schwerer, NDS	S. Takacs, ATOMKI	S. Taova, VNIIEF	T. Tárkányi, ATOMKI
V. Pronyaev, NDS	V. Varlamov, CDFE	M. Vlasov, KINR	M. Wirtz, NDS
H.W. Yu, CNDC	V. Zerkin, NDS	Y.X. Zhuang, CNDC	EXFOR, NEA-DB