Nuclear Data Section
International Atomic Energy Agency
P.O.Box 100, A-1400 Vienna, Austria

Memo CP-D/530

Date: 11 November 2008
To: Distribution
From: N. Otsuka, V. McLane, S. Dunaeva

Subject: Coding of uncertainty ranges under ERR-ANALYS

Since in many cases partial systematic uncertainties are given as maximum, minimum, or a range, and to make specification of such uncertainties usable by computational codes, we propose a new method for the coding of systematic uncertainties. The revision of the EXFOR Format Manual is proposed below:

ERR-ANALYS. Explains the sources of uncertainties and the values given in the COMMON or DATA sections under data headings of the type ERR- or -ERR. See also **LEXFOR, Errors**.

1. Presence is obligatory, except when not relevant. May contain free text or coded information with free text. However, coded information is obligatory when more than one error field associated to the dependent variable is given in the data set.

2. The coded information is of the form: (heading, minimum value, maximum value, correlation factor) free text

   Heading field. Contains the data heading or the root of the data heading to be defined. Root means that the data heading given also defines the heading preceded by + or -.

   Minimum value field The minimum value is given in per-cent. Used to give an uncertainty expressed as a minimum value or the lower limit of a range. A single value is given in this field and the maximum value field. This field is optional when constant or point-wise values are coded in the COMMON or DATA sections.

   Maximum value field The maximum value is given in per-cent. Used to give an uncertainty expressed as a maximum value or the upper limit of a range. A single value is given in this field and the minimum value field. This field is optional when constant or point-wise values are coded in the COMMON or DATA sections.

   Correlation Factor Field. Contains the correlation factor, coded as a floating point number. This field is optional and is used only with systematic data uncertainty headings of the form ERR-1, *etc*. If this field is not given, the trailing comma is omitted.

3. If two or more error fields are given, then the data headings are given as codes under this keyword, each on a separate record, starting in column 12, and followed by free text explanation.

4. If the uncertainty value is a constant, it must also be coded in the COMMON or DATA section. Point-wise values are coded in the DATA section.

***Example*:**

```
ERR-ANALYS (ERR-T) Total uncertainty, includes statistical and
             systematic uncertainties summed in quadrature.
           (ERR-1,0.7,0.7) detector efficiency (0.7%);
           (ERR-2,1.,1.) gamma-ray self-absorption (1%);
           (ERR-3,1.,1.) cascade gamma coincidence (1%);
           (ERR-4,,0.5) sample weight (<0.5%);
           (ERR-S,1.,3.) counting statistics (1-3%);
           (MONIT-ERR,1.5,3.0) monitor cross sections (1.5-3%).
...
COMMON               3          5
ERR-1      ERR-2      ERR-3
PER-CENT   PER-CENT   PER-CENT
0.7        1.         1.
ENDCOMMON            5          0
DATA                36          0
EN         EN-ERR     DATA       ERR-T
MEV        MEV        MB         MB
...
```

The second field of ERR-ANALYS has been used for the correlation factor. This should be shifted to the 4-th field when this proposal is approved.
Affected subentries: 12869.005 12921.001-003

Distribution:

a.mengoni@iaea.org
a.nichols@iaea.org
blokhin@ippe.ru
chiba@earth.sgu.ac.jp
claes.nordborg@oecd.org
ganesan@barc.gov.in
gezg@ciae.ac.cn
hasegawa@nea.fr
henriksson@near.fr
hongwei@ciae.ac.cn
jhchang@kaeri.re.kr
kaltchenko@kinr.kiev.ua
katakura.junichi@jaea.go.jp
kato@nucl.sci.hokudai.ac.jp
kirarlyb@atomki.hu
l.vrapcenjak@iaea.org
manokhin@ippe.ru
mmarina@ippe.ru
mwherman@bnl.gov
nklimova@kinr.kiev.ua
n.otsuka@iaea.org
nrdc@jcprg.org
oblozinsky@bnl.gov
ogritzay@kinr.kiev.ua
otto.schwerer@aon.at
samaev@obninsk.ru
s.babykina@polyn.kiae.su
s.dunaeva@iaea.org
stakacs@atomki.hu
stanislav.hlavac@savba.sk
taova@exped.vniief.ru
tarkanyi@atomki.hu
varlamov@depni.sinp.msu.ru
vlasov@kinr.kiev.ua
vmclane@optonline.net
v.zerkin@iaea.org
yolee@kaeri.re.kr