

ERR-ANALYS: Correlation Coefficient Field

(N. Otsuka, 2012-04-13, CP-D/738)

A part of Memo CP-D/704 (WP2011-32rev) is for covariance coded under the keyword COVARIANCE and it will be discussed separately in the NRDC 2012 Meeting in the relation with Action 34 of the NRDC 2011 Meeting. See also WP2012-27.

The memo CP-D/704 also discusses the usage of the correlation coefficient field in the keyword ERR-ANALYS. The field has been used only in two entries, and I propose change it to the correlation property field as below so that we can accommodate much more correlation information:

ERR-ANALYS

~~Correlation Coefficient Field. Contains the correlation coefficient, 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.~~

Correlation Property Field. Contains one of the following correlation property flags

- U: Uncorrelated
- F: Fully correlated
- P: Partially correlated
- C: Correlated (when information is insufficient to determine F or P).

This field is optional. If this field is not given, the trailing comma is omitted.

This field may be used only when the authors mention the properly in articles.

Expansion of ERR-i

The heading ERR-1 has been defined as “1st *systematic* uncertainty” in dictionary 24. But compilers have used this heading for any partial uncertainty (except when more specific heading is available) even if authors do not declare it as “systematic”. To harmonize the definition with the real usage, ERR-1 must be defined as “1st *partial* uncertainty”. The source of uncertainty should be always clearly given in free text.

Example

ERR-ANALYS	(ERR-T,,P)	Total uncertainty
	(MONIT-ERR,,P)	Monitor cross section
	(ERR-1,,U)	Number of counts (Am)
	(ERR-2,,U)	Number of counts (Al)
	(ERR-3,,F)	Gamma intensity (Am)
	(ERR-4,,U)	Sample mass (Al)
	(ERR-5,,P)	Sample mass (Am)
	(ERR-6,,F)	Efficiency ratio (Al/Am)
	(ERR-7,,F)	Decay correction (Am)
	(ERR-8,,U)	Secondary neutron correction (Am/Al)

ERR-S and ERR-SYS

The headings ERR-S and ERR-SYS will be kept for uncertainties explained as “statistical uncertainty” and “systematic uncertainty” without further specification. This is also for compatibility with the existing many entries.

ERR-1 and DATA-ERR1

The headings ERR-1 etc. will be used only when the sum of these partial uncertainties make sense. Sometimes authors describe “Absolute uncertainty is about 5%” with error bars in the figure (typically in old CPND differential data). When the compiler wish to keep both the constant 5% uncertainty and digitized error bars as coded information, they must be coded under DATA-ERR1 and DATA-ERR2 as done by CPND centres.

SUBENT	F0929006	20080606	
BIB	6	11	
REACTION	(6-C-12(A,P)7-N-15,,SIG)		
...			
ERR-ANALYS	(DATA-ERR1)	Absolute error	
	(DATA-ERR2)	Error bars represent relative errors of 13% and include estimates of the error caused by neglecting the end portions of the distributions	
	(EN-ERR-DIG)	Energy digitizing error	
STATUS	(CURVE) Fig.6		
ENDBIB	11		
COMMON	3		3
DATA-ERR1	EN-ERR-DIG	ERR-DIG	
PER-CENT	MEV	MB	
30.	0.003	0.025	
ENDCOMMON	3		
DATA	3		8
EN	DATA	DATA-ERR2	
MEV	MB	MB	
	20.168	10.595	1.0175
	20.431	8.9169	0.90399
	20.92	8.384	0.90395
	21.2	9.5323	1.0169
	21.644	7.0756	1.017
	21.915	7.6583	1.0171
	22.505	5.0981	1.0167
	22.821	5.0059	0.79095
ENDDATA	10		
ENDSUBENT	30		