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Memo CP-D/438

Date: 22 September 2005
To: Distribution
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Subject: **Corrections and Streamlining of "Reaction Types" (EXFOR dictionaries 13/213, used in dictionaries 36/236) and relation to Archive dictionary 14**

During the preparations of the next dictionary transmission (9089), which, for the first time, will include all new dictionaries (e.g. 213, 227, 236) in all formats including EXFOR (TRANS) format, we undertook a cleanup of the Reaction Type codes given in dictionary 213 (replacing dict.13), which are used in the quantities dictionary 236 (replacing 36). Also, an e-mail by N. Otsuka of 2 July was pointing out some of the inconsistencies which are now being rectified.

The reaction type is, among other things, used to check the presence of the necessary independent variables in the respective subentry, and also determines the grouping of quantities into categories for output as TRANS dictionary 36/236.

1. Several previously existing reaction types had been removed because all related quantities are now obsolete. However, these obsolete quantities are still kept in dict. 36/236 (with obsolete flag) so that old entries using them can still be processed (until all of them are updated). To keep the proper sorting in the output of TRANS dictionary 236, these reaction types were re-introduced (with obsolete flag). These concerns the reaction types CO, COD, COP, LC, LCP, MC.

2. Missing reaction type P4A was introduced.

3. An ambiguity which has been existing in the Archive/Daniel dictionaries for many years, has been resolved. While the reaction type is defined as having a length of 3 characters, some of the codes in dict. 13/213 and/or 36/236 appear to be 4 characters long (in some cases with the 3rd position being blank). The 4th character has its own definition which is given in Archive Dictionary 14, called (somewhat misleadingly) "Reaction dimension".

The entries of dict. 14 are:

4	* 4 PI
A	average
D	Adler-Adler
E	* sqrt(E)
M	Reich-Moore
N	ratio
P	spectrum average
S	reaction combination
T	R-Matrix
V	Vogt

We believe that there is no need to use this dictionary, respectively the 4th position in the reaction type, for the presently used software. With the exception of '4' (= times 4π), these codes make no difference for the purposes of the reaction type (i.e. checking of presence of independent variables, and grouping of quantities into categories). Therefore we convert all "apparent 4-character reaction types" into true 3-character-reaction types: The ones with '4' at the end must be a separate reaction type (because an angle is needed as variable), while the other ones can be joined with an existing pure 3-character reaction type. This implies updates of all concerned dictionaries, i.e., 36/236, and in some cases also 13/213. We do keep dictionary 14 for backwards compatibility, but we are not aware of any current actual use of it.

The following changes are therefore made:

4-character codes appearing only in Dict. 36/236 but not in 13/213:

CS N, CS E, CS S, CS+N: All changed to CS
CSPE, CSPN: All changed to CSP
DE E: Changed to DE
FFAN: Changed to FYA
FY N, FY S: All changed to FY
INP4: Changed to IP4 (new)
INTE: Changed to INT
RE D: Changed to RE
RP A, RP E, RP D, RP M, RP N, RP T, RP V: All changed to RP
RI S: Changed to RI
RPPA, RPPT: All changed to RPP

4-character codes appearing in Dict. 36/236 and in 13/213:

CS 4: Changed to CS4
CSP4: Changed to CP4
DE 4: Changed to DE4
INT4: Changed to IT4

PYPA: Changed to PYQ (note that in this case, the A in the 4th position was not coming from dictionary 14 but was, as in cases where it is in the 3rd position, referring to angular dependence. This was a genuine 4-character reaction type which actually contradicts the format, therefore it is now changed to the somewhat arbitrary 3-character code PYQ)

4. During these updates we decided to also modify those 3-character reaction type codes with embedded blanks in the 2nd position or with * in the 3rd position, because both cases may cause problems with some programs. Therefore the following reaction types are renamed:

   E A to EA
   E P to EP
   G * to GZ
   L P to LP
   P * to PZ

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