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Memo CP-D/678

Date: 27 January 2011
To: Distribution
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Subject: Expression of values under DECAY-DATA

The current EXFOR Formats Manual (IAEA-NDS-2007, February 2008) asks compilers to use *floating*-point number expression for radiation energies and abundances (intensities) under the keyword `DECAY-DATA`. However this is different from our usual practice.

Example
The annihilation radiation energy is not coded as `5.11E+02` but coded as `511..`

The rules given in the current Formats Manual also contradicts some examples given in the Manual.

The following amendment of the Formats Manual is proposed:

Half-life field. Contains the actual half-life of the nuclide specified, coded as **a fixed-point number with decimal-point or floating-point number** (see page 4.2, no blanks are allowed), followed by a unit which consists of a code from Dictionary 25 with the dimension TIME; no embedded blanks are allowed.
…
SF2. Energy. The energy of the radiation in keV, coded as a **fixed point number with decimal-point** (see page 4.2, no blanks permitted); no units are given in the code.
…
SF3. Abundance. The abundance of the observed radiation per decay, coded as a **fixed-point number with decimal-point** (see page 4.2, no blanks permitted).
…

The current rule is compared with an old rule manual shown in IAEA-NDS-3 Rev. 85/8 in the next page. Obviously the description of the old manual coincides with our current coding.

Comparison of the current rule and an old rule

EXFOR Formats Manual (IAEA-NDS-2007, February 2008):

Half-life field. Contains the actual half-life of the nuclide specified, coded as a number, readable in an E11.4 format (see page 4.2, no blanks are allowed), followed by a unit which consists of a code from Dictionary 25 with the dimension TIME; no embedded blanks are allowed.

…

SF2. Energy. The energy of the radiation in keV, coded as a **floating-point number** (see page 4.2, no blanks permitted); no units are given in the code.

…

SF3. Abundance. The abundance of the observed radiation per decay, coded as a **floating-point number** (see page 4.2, no blanks permitted).

Examples of coding for DECAY-DATA

…

c) `DECAY-DATA (25-MN-50-G,0.286SEC,B+,`**`6610.`**`)`

d) `DECAY-DATA (25-MN-50-M,1.76MIN,DG,`**`785.`**`,,B+)`

…

g) `DECAY-DATA (60-ND-139-G,30.0MIN,B+,,`**`0.257`**`,DG,`**`405.,0.055`**`)`

…

NDS EXFOR Manual (IAEA-NDS-3 Rev. 85/8):

2. Half-life field.

…

The format is nnnUNIT where nnn is a fixed-point number **with decimal point, or an E-format number with E and without blanks;**

…

SF4. Energy: The energy of the radiation in keV. It is coded as a **fixed-point number with decimal point** (compare page 5.3), without a blank. No unit is coded.

…

SF5. Abundance: The abundance of the observed radiation per decay. It is coded as a **fixed-point number with decimal-point** (compare page 5.3), without blank. …

C. Examples of coding for DECAY-DATA

…

c. `DECAY-DATA (25-MN-50-G,0.286SEC,B+,`**`6610.`**`)`

d. `DECAY-DATA (25-MN-50-M,1.76MIN,DG,`**`785.`**`,,B+)`

…

f. `DECAY-DATA (60-ND-139-G,30.0MIN,B+,,`**`0.257`**`,DG,`**`405.,0.055`**`)`

…

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