

DAF/324-0

MEMORANDUM 4C-2/40

From: H. Potters & F. Froehner

Subject: Use of RAW, REL and FCT modifiers

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4th July 1973

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At the discussions held in Vienna prior to the ninth Four-Centre meeting in Moscow, it transpired that there was confusion as to the use of the RAW, REL and FCT modifiers.

CCDN feels strongly that this confusion should be resolved according to the adage "what is coded should be uniquely defined: what cannot be uniquely defined should go in free text". The following is an attempt to define uniquely the above-mentioned general modifiers:

1. For the RAW modifier, we point to the definition given in Memo 4C-2/36, p. 10. for two cases :

- (a) Transmission data with units NO-DIM;
- (b) Reaction yields with units NO-DIM (as in Memo 4C-2/36), BARN (if divided by the sample thickness) or ARB-UNIT (if given as counts/channel).

If necessary, this list can be extended to other types. In order to control the significance of the RAW modifier, a description should be entered in LEXFOR. Clarification in full text is necessary.

- 2. Shape data, i.e. data proportional to the quantity given in the ISO-QUANT, with unknown normalization factor: use the REL modifier. Units should be ARB-UNITS.
- 3. Cross sections multiplied by a factor not containing another cross section (e.g. a mathematical factor, an abundance or a branching ratio): use FCT and the appropriate units. Explain in free text.
- 4. Cross sections multiplied by a factor containing cross sections other than that in question (e.g. ISO-QUANT ratios): use the appropriate ISO-QUANT combination and units.
- 5. Cross sections multiplied by a factor containing the cross section itself at a certain energy and angle (cross section ratios): this is essentially case 2, except that the author gives a definite reference point where he wants to have his data normalized. Therefore, REL

should be used and free text should state the reference point. Appropriate units should be used (so NO-DIM for cross section ratios). An exception is the ratio to the 90 degree value of an angular distribution, where the RSD modifier with NO-DIM should be used.

There was a rule that the REL modifier should always go with ARB-UNITS. In our opinion it is a major error in a system to link elements rigidly if in principle they have nothing to do with each other, even if this is hidden by vague definitions. The only reason for such a rule is that a checking programme can find violations. We are not, however, designing systems for checking programmes.

We find it natural to use NO-DIM in case 5 (as with the RSD modifier) and feel the above-mentioned to be an unnecessary constraint. Much of the confusion, especially between the FCT and REL modifiers, stems from the desire to use the right units, i.e. NO-DIM, so that the FCT modifier appears in case 5, where it should definitely not appear. In fact, it is a rule which tends to mess up the ISO-QUANT or forces one to put nonsense in the units. It is therefore a bad rule and should definitely be abandoned.


Fritz Froehner

P.S. After having said all this, some of us (e.g. F.F.) feel that these three modifiers should be abandoned and replaced by free text explanation. We realize that for example renormalization could give rise to a need for them, but then we expect that in the overwhelming majority of cases it is much simpler and especially safer to do without them and to scan the STANDARD entries for all the sub-works containing the ISO-QUANT in question. A conscientious evaluator has to do this anyway - we know by now that many errors with modifiers and even ISO-QUANTS have occurred in the past and will occur in the future, not because of ill will but because of the weakness of human nature. If, however, we are to continue with REL, RAW and FCT, we could at least discontinue use of RSD and replace it henceforth by REL. This would do away with the exception to the REL definition given in this memo.

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