

Memo CP-D/176

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From: *L* *Schwerer*
H.D. Lemmel and O. Schwerer

Subject: Spin and Parity for excited levels

Excited levels are defined by their energy, E-LVL, (or, if this is not exactly known, by LVL-NUMB), which is sufficient to define uniquely the data given under REACTION, e.g. a partial cross section. Nevertheless, in some cases the compiler may wish to give spin and parity of the level, too, as this in certain cases is important "additional information". According to present compilation rules, this can only be done in free text, since the headings SPIN J and PARITY are reserved for resonances only, as can be seen from their explanations in dictionary 24. They have, however, repeatedly been used, erroneously, for excited levels, in particular in charged particle Exfor entries.

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At the NRDC Meeting in October 1985 (see Memo CP-D/144 of 20 December 1985) there was an Action 11.3 on the CPND centers and CDFE "to propose LEXFOR entries, if there continues to be an interest to use the column-headings SPIN, PARITY, MOMENTUM L in a wider sense than their present use for resonance-parameters only" (=continuing action D.9 of the 1984 NRDC Meeting).

Since this action is not yet fulfilled but the problem came up again in a preliminary TRANS tape from the Sapporo Study Group, we are proposing the following:

Rather than extending the usage of the headings SPIN J and PARITY we would prefer keeping the formalisms for resonances and for excited levels separate. Since introduction of new headings for level-spin and level-parity in addition to the existing headings would probably increase the confusion, we propose to introduce a new BIB keyword LEVEL-PROP where the relevant data are given within the BIB section (similar to DECAY-DATA, but it should be easily intelligible):

LEVEL-PROP (82-PB-206, E-LVL=0., SPIN=0., PARITY=+1.,
E-LVL=1.34, SPIN=3., PARITY=+1.)

(82-PB-207, LVL-NUMB=2., SPIN=1.5, PARITY=-1.)

If we do not receive an objection to this proposal in due time, we will regard it as approved in principle and submit the necessary Manual/Lexfor update for discussion at the next data centers' meeting.