

**MEMO 4C - 4 / 95**

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To: Distribution

From: S.Maev (alias: S. Mayev, S.Maiev)

Subjects: Additions to LEXFOR Manual for the codes proposed  
by Area-4 Center - CJD (Conclusion C16 of 1999 NRDC Meeting)

For codes proposed after 1998 AGM in Vienna and approved during 1999 NRDC meeting the following LEXFOR Manual Entries are submitted. See WP8 of the 1999 NRDC Meeting.

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**Item 1. Entry to be added to FISSION NEUTRON SPECTRA chapter:****4. Average number of prompt neutrons emitted by Fission Fragment of a given mass.**

Independent variables-ELEMENT and/or MASS and/or ISOMER. Incident particle energy (for induced fission). Units - NO-DIM, ARB-UNITS.

**Example:**

```

SUBENT          40420002  YYYYMMDD
BIB             ..      ..
REACTION        (98-CF-252(0,F)MASS,PR,NU,FF)  AVERAGED NUMBER OF
                PROMPT NEUTRONS EMITTED BY A FRAGMENT OF DEFINITE
                MASS

ENDBIB         ...
NOCOMMON
DATA           3      ..
MASS           DATA      ERR-S
NO-DIM         NO-DIM     NO-DIM
                79.5      0.615      0.011
ENDDATA

```

.....

**5. Average number of prompt neutrons emitted by Fission Fragment of a given mass and energy.**

Independent variables-ELEMENT and/or MASS and/or ISOMER, secondary energy, Incident particle energy (for induced fission). Units class 1/E. Or NO-DIM, ARB-UNITS.

**Example:**

```

SUBENT          40420003  YYYYMMDD
BIB             ..      ..
REACTION        (98-CF-252(0,F)MASS,PR,NU/DE,FF,REL)  AVERAGED
                NUMBER OF PROMPT NEUTRONS EMITTED BY A FRAGMENT OF
                DEFINITE MASS AND ENERGY

ENDBIB         ...
NOCOMMON
DATA           5      ..
MASS-MIN       MASS-MAX   E      DATA      ERR-S
NO-DIM         NO-DIM     MEV     ARB-UNITS  PER-CENT
                120.      121.5      127.5      1.4      29.
ENDDATA

```

Item 2. Entry to be added to FISSION YIELDS chapter:

11. **Energy spectrum of Fission Fragments.** Energy spectrum measured simultaneously with fission yield, mainly of primary fragments.

**REACTION SF6 Code:** FY/DE

Independent variables - ELEMENT/MASS/ISOMER, secondary energy, incident particle energy for induced fission. Unit class - FY/E. Or ARB-UNITS.

**Example:**

```

SUBENT          40420062      YYYYMMDD
BIB
REACTION        (98-CF-252(0,F)MASS,PRE,FY/DE,,REL)
ENDBIB
NOCOMMON
DATA
MASS            E            DATA      ERR-S
NO-DIM          MEV          ARB-UNITS PER-CENT
...            ...            ...            ...

SUBENT          40194004      YYYYMMDD
BIB              1              1
REACTION        (94-PU-242(N,F)MASS,PRE,FY/DE)
ENDBIB          1
COMMON          1              3
EN
MEV
  3.0
ENDCOMMON
DATA            4
MASS            E            DATA      ERR-S
NO-DIM          MEV          PC/FIS/MEV PER-CENT
...            ...            ...            ...

```

**Item 3.** Entry to be added to FITTING COEFFICIENTS chapter:

**Legendre Coefficients for Double-Differential Cross-Sections**

**Definition:** Coefficients obtained by fitting of a double-differential cross-section using an equation containing a sum of Legendre polynomials.

**REACTION Coding:** DA/DE in SF6, LEG in SF8 plus a code indicating the exact representation used.

**Representation:**

DA/DE,,LEG/RSL =  $A_1$  (units NO-DIM), where

$$\frac{d^2\sigma}{dEd\Omega}(E, E', \vartheta) = \frac{\sigma}{4\pi} \left[ 1 + \sum_{l=1}^n (2l+1) A_l(E, E') P_l(\cos \vartheta) \right]$$

**Example: Legendre Coefficients for double-differential neutron emission cross-section**

```

SUBENT          CEEEESSS    YYYYMMDD
BIB
REACTION        ( . . . . (N, X) 0-NN-1, EM, DA/DE, , LEG/RSL )
ENDBIB
NOCOMMON
DATA
EN              E              5          NUMBER      DATA          ERR-T
MEV            MEV            NO-DIM      NO-DIM         NO-DIM
. . .          . . .          . . .      . . .         . . .
ENDDATA
ENDSUBENT

```