

## Compilation of Fission Neutron Multiplicity Distribution

(N. Otsuka, S. Simakov, 2015-02-18, Memo CP-D/867)

We are interested in the fission neutron multiplicity distribution ( $P_n$ ) in the relation with passive non-destructive assay of nuclear materials. This quantity was not within the scope of EXFOR compilation until the branch code `NUM` was introduced in 2004.

There are still measured fission neutron multiplicity distributions missing in EXFOR. We checked EXFOR against experimental  $P_n$  values considered by N. Holden in his reports [1,2], and found that  $P_n$  values reported in 11 articles have to be compiled by NNDC, CNDC and CJD.

### References

- [1] N.E .Holden et al., BNL-NCS-35513-R,1984 =IAEA-TECDOC-335,248,1984
- [2] N.E. Holden et al., BNL-NCS-36379,1985 (Abstract is in Rad.Eff.96(1986)289.

**Experimental fission neutron multiplicity distribution (Pn) considered by N. Holden and missing in EXFOR**

Reference	Fissioning system considered in BNL reports	EXFOR	Pn in X4?	Source	36379*	35513-R*
Zhang Huanqiao+,J,NSE,86,315,1984	$^{240}\text{Pu}$ , $^{242}\text{Cm}$ , $^{244}\text{Cm}$	30609	yes		11	37
J.Halperin+,J,NSE,75,56,1980	$^{242}\text{Cm}$	10930	no!	Table II	12	50
D.A.Hicks+,J,PR,101,1016,1956	$^{236}\text{Pu}$ , $^{238}\text{Pu}$ , $^{240}\text{Pu}$ , $^{242}\text{Pu}$ , $^{242}\text{Cm}$ , $^{244}\text{Cm}$	13715	no!	Table II	13	34
B.C.Diven+,J,PR,101,1012,1956	$^{239}\text{Pu+n}$ , $^{240}\text{Pu}$ , $^{244}\text{Cm}$	12337	no!	Table II	21	43
R.W.Stoughton+,J,NSE,50,169,1973	$^{246}\text{Cm}$ , $^{248}\text{Cm}$	10605	no!	Tables I and II	23	58
M.Dakovskii+,J,SNP,18,371,1974	$^{244}\text{Cm}$ , $^{246}\text{Cm}$	40203	no!	Table I	24	59
J.W.Boldeman,C,73KIEV,4,114,1973	$^{248}\text{Cm}$	30367	yes		26	61
M.Dakovskii+,J,SNP,17,360,1973	$^{246}\text{Cf}$	40188	no!	Table	29	
D.C.Hoffman+,J,PR/C,21,637,1980	$^{250}\text{Cf}$ , $^{254}\text{Cf}$ , $^{257}\text{Fm}$	10901	no!	Figs.1 to 4	35	
Yu.A.Lazarev+,J,PL/B,52,321,1974	$^{252}\text{No}$	41559	yes		53	
R.Gwin+,J,NSE,87,381,1984	$^{233}\text{U+n}$ , $^{235}\text{U+n}$ , $^{239}\text{Pu+n}$ , $^{241}\text{Pu+n}$	12833+ 12834	yes			7
J.W.Boldeman,J,NSE,91,114,1985	$^{233}\text{U+n}$ , $^{235}\text{U+n}$ , $^{239}\text{Pu+n}$ , $^{240}\text{Pu}$ , $^{241}\text{Pu+n}$ , $^{242}\text{Pu}$	30772	yes			36
Hwang Shengnian+,J,ASI,23,(1),46,1974	$^{238}\text{U}$	(CNDC)	no!	Table 2		29
A.G.Popeko+,J,SNP,24,245,1976	$^{238}\text{U}$	(CJD)	no!	Text (p246 right)		28
E.Baron+,C,66PARIS,2,57,1966	$^{240}\text{Pu}$	21495	yes			40
Wang Yusheng+,J,ASI,23,(1),38,1974	$^{240}\text{Pu}$	(CNDC)	no!	Table 2		Wang74
J.E.Hammel+,J,PR,100,190,1955	$^{240}\text{Pu}$	(NNDC)	no!	Table I		Hammel55

\*The column “36379” and “35513-R” give the citation numbers in BNL-NCS-363709 and BNL-NCS-35513-R.