Experience and importance of proof-read of EXFOR entry via author

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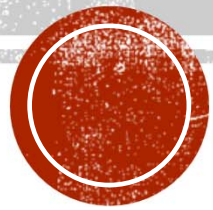
India



Content

- Need of proof-read
- Procedure
- Results of proof-read

Need of proof-read

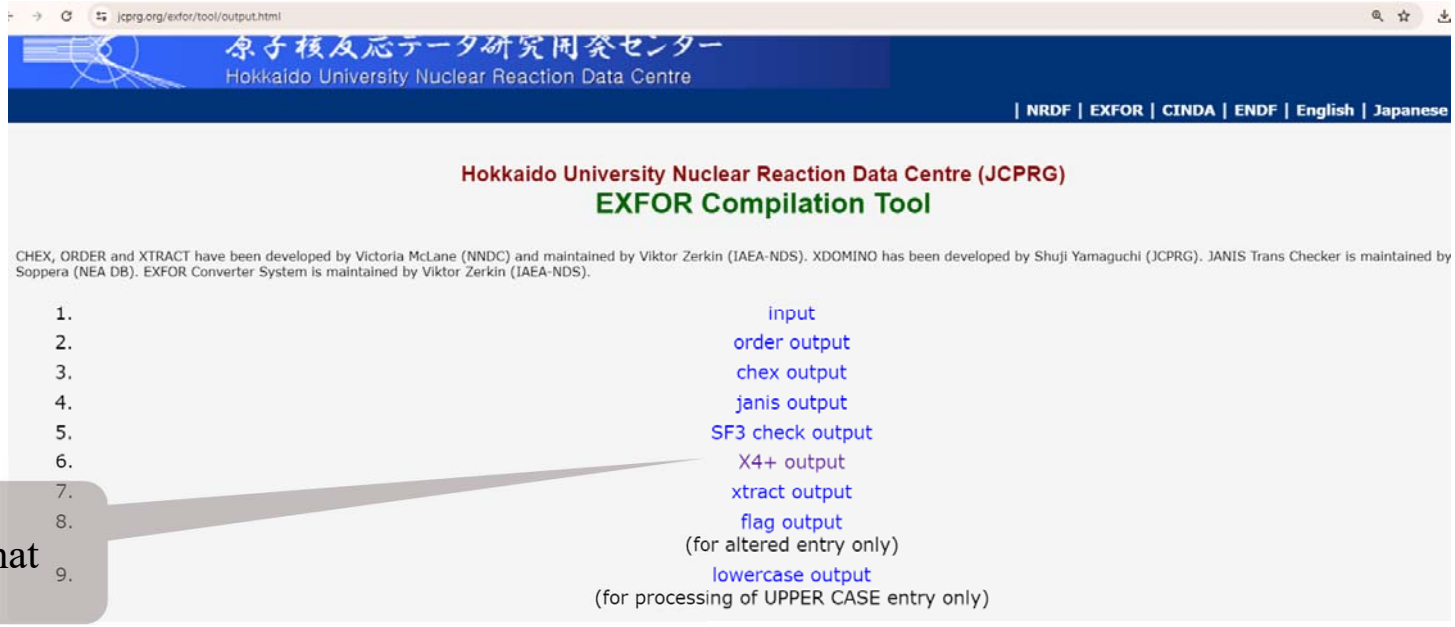
- Identify and rectify inconsistencies, discrepancies, or missing information and enhance the overall quality of the data.
- Ensures data accuracy and true outcomes of the experiments.
- Author gain insights into data interpretation and utilization by others.
- Encourages authors to refine their numerical data to ensure clarity and precision in future submissions.

Experiences and outcomes of proof-read (2023-)

- Indian Centre initiated this activity last year.
- Sent nearly 40 EXFOR entries to authors and received 30 responses during the period.
- Authors provided feedback, suggestions, and approvals for the EXFOR entries.
- Proofreading enhances the accuracy of EXFOR entries and aids in obtaining numerical data from the author.

Procedure

- Once the compilation of a particular entry is completed, we forward the text and PDF (X4+) file of the entry to the author for their comments, suggestions, and approval
- For PDF formatting, we utilize https://www.jcprg.org/exfor/tool/.
- After uploading the entry to the website, we simply click on the "X4+" output option.



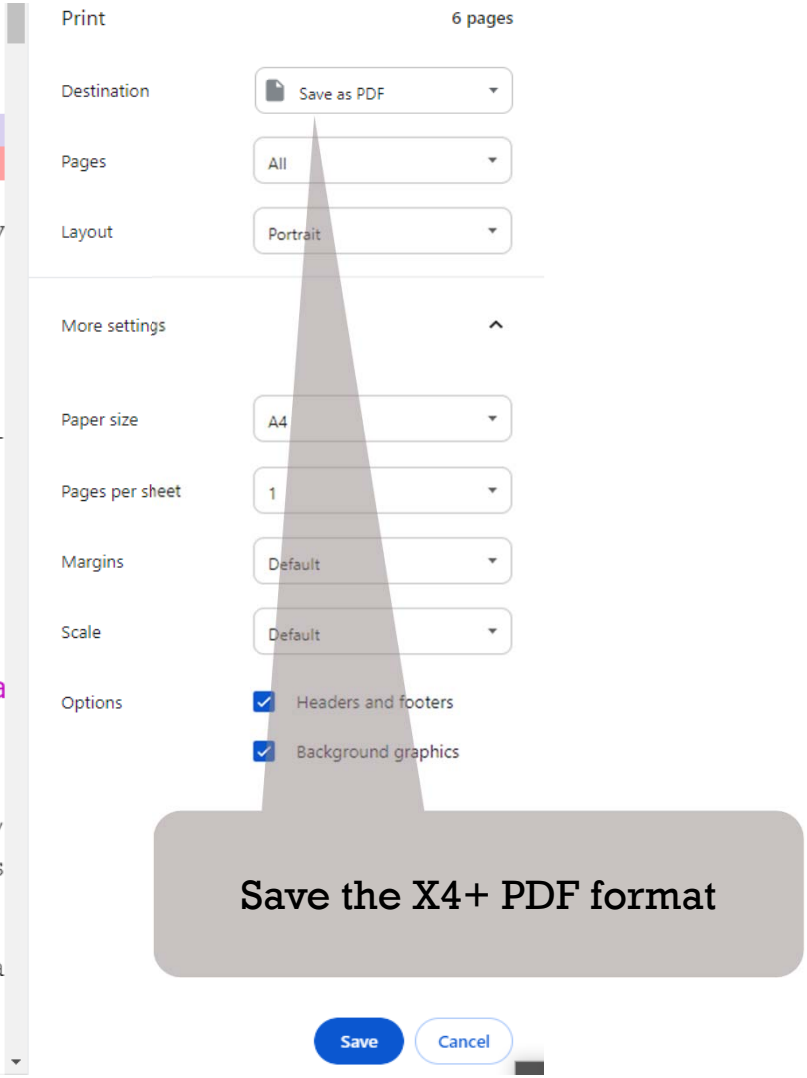
Open the “X4+” format

X4+ output in PDF format.

Browser Used: Google Chrome

22/04/2024, 15:39

```
ENTRY          D6424001    20231114
SUBENT         D6424001    20231114
BIB                 11          26
TITLE       Inclusive alpha production for the 6Li + 51V sy
AUTHOR      (C.Joshi, H.Kumawat, V.V.Parkar, D.Dutta,
            S.V.Suryanarayana, V.Jha, R.K.Singh, N.L.Singh,
            S.Kailas)
INSTITUTE   (3INDBDA,3INDTRM)
            (3INDIND) Homi Bhabha Institute, Mumbai
            (3INDIND) UM-DAE, Centre for Excellence in Basi
               Science, Mumbai
            #(3INDBDA M.S. University of Baroda, Baroda, India
            #,3INDTRM) Bhabha Atomic Research Centre, Trombay,
            #(3INDIND) India, India
            #(3INDIND) India, India
REFERENCE   (J,PR/C,105,034615,2022)
            #(J,PR/C,105,034615,2022) Jour: Physical Review, Pa
FACILITY    (VDGT,3INDTRM) 14-UD BARC-TIFR Pelletron-Linac
            #(VDGT Tandem van de Graaff
            #,3INDTRM) Bhabha Atomic Research Centre, Trombay,
SAMPLE      Self-supported 51V target of thickness 1.17 mg/
DETECTOR    (TELES,SIBAR,SIBAR) A set of four solid state s
            surface barrier telescope detectors in dE + E
            arrangement.
            (SIBAR) Two surface barrier detectors mounted a
            +/- 10 degree for beam monitoring and absolute
            normalization.
            #(TELES Counter telescope
```



Save the X4+ PDF format

Addition of STATUS=APRVD when approved without comments

```
SAMPLE      (64-GD-158,ENR=0.9732) of thickness ~134.4 ug/cm2 were
            fabricated on ~50 ug/cm2 carbon foil backing.
DETECTOR    (SIBAR) Two silicon surface barrier detectors with 1 mm
            diameter aperture mounted at +/- 15.5 degrees about
            about the incident beam direction. The detectors were
            to monitor the beam and cross-section normalization.
            (MAGSP,MWPC) A position-sensitive multiwire
            proportional counter, with an active area of
            15 x 5 cm2 was mounted at the HIRA focal plane for
            detection of evaporation residues.
            #(SIBAR) Silicon surface barrier detector
            #(MAGSP Magnetic spectrometer
            #,MWPC) Multi-wire proportional counter
METHOD      (TOFDE) Delta E-TOF for evaporation residue
            selection.
            (OLMS) Fusion cross-sections were measured
            using the Heavy Ion Reaction Analyzer (HIRA)
            #(TOFDE) Particle identification by 'TOF-Delta E' measurement
            #(OLMS) On-line mass separation of a product
ERR-ANALYS  (DATA-ERR) The corresponding uncertainty in the fusion
            cross section is due to
             - Statistical error in ER and monitor yields
             - error in determining HIRA transmission efficiency
STATUS      (APRVD) Approved by M.Maiti (2024-01-12)
            (TABLE,,R.Prajapat+,J,PR/C,107,064616,2023) TABLE I
            #(APRVD) Approved by author
            #(TABLE Data presented by authors
            #,R.Prajapat+
            #,J
            #,PR/C
            #,107
            #,064616
            #,2023)
HISTORY     (20231115C) Ravikumar V. Patil
ENDBIB              29          0
```

The code “APRVD” with free text “Approved” signifies author approval without feedback.

Addition of STATUS=APRVD when approved with comments

```
FACILITY    (VDGT,3INDTRM) 14-UD BARC-TIFR Pelletron-Linac facility
            #(VDGT Tandem van de Graaff
            #,3INDTRM) Bhabha Atomic Research Centre, Trombay, Mumbai, India
SAMPLE      Self-supported 51V target of thickness 1.17 mg/cm2.
DETECTOR    (TELES,SIBAR,SIBAR) A set of four solid state silicon
            surface barrier telescope detectors in dE + E
            arrangement.
            (SIBAR) Two surface barrier detectors mounted at
            +/- 10 degree for beam monitoring and absolute
            normalization.
            #(TELES Counter telescope
            #,SIBAR Silicon surface barrier detector
            #,SIBAR) Silicon surface barrier detector
            #(SIBAR) Silicon surface barrier detector
METHOD      (EDE)
            #(EDE) Particle identification by 'E/Delta E' measurement
ERR-ANALYS  (DATA-ERR) No information on the source of uncertainty
            -Statistical errors were ~ 1% at forward angles and
             ~ 10% above 70 degree for 19.7, 22.7, and 25.7 MeV.
             In case of 13.6 MeV the statistical error < 5%  at all
            angles.
STATUS      (APRVD) Proof-read by H.Kumawat (2024-01-02)
            #(APRVD) Approved by author
HISTORY     (20221103R) Data received from C.Joshi
            (20231114C) B.SATHEESH
ENDBIB                26          0
NOCOMMON
ENDSUBENT             29          0
SUBENT       D6424002   20231114
BIB                   2          3
REACTION    (23-V-51(3-LI-6,X)2-HE-4,,DA/DE)
            # (23-V-51(3-LI-6,X)2-HE-4,,DA/DE)
```

If compiler receives some comments/suggestions from the author, we use code “APRVD” with free text “Proof-read”

Numerical Data received during proof-read (EXFOR D6420)

```
                #,SIBAR) Silicon surface barrier detector
METHOD          (EDE)
                #(EDE) Particle identification by 'E/Delta E' measurement
STATUS          Request sent to H.Kumawat from G.Mohanto (2022-09-05)
HISTORY         (20231027C) VT+LV+On.
ENDBIB                  21           0
COMMON                   1           1          12
                #Legend: 1 x 1 x 12 : data columns * lines * column width
                | #EN | Energy of incident projectile, laboratory system | MEV | MeV |
                #/Legend
EN
MEV
65.
ENDCOMMON
ENDSUBENT               28           0
SUBENT           D6420002    20231027
BIB                     3           3
REACTION        (41-NB-93(6-C-13,X)2-HE-4,,DA/DE)
                # (41-NB-93(6-C-13,X)2-HE-4,,DA/DE)
                # Target:NB-93 #Projectile:6-C-13 #Reaction:6-C-13,X  #Process:X:Process unspec
                # Product: [2-HE-4]
ERR-ANALYS      (DATA-ERR) No information on the source of uncertainty
STATUS          (CURVE,,H.Kumawat+,J,PR/C,105,024611,2022) Fig. 1(a-d)
                #(CURVE Data read from a curve
                #,H.Kumawat+
                #,J
                #,PR/C
                #,105
                #,024611
                #,2022)
ENDBIB                  3           0
NOCOMMON
DATA                    4         115          12
                #Legend: 4 x 115 x 12 : data columns * lines * column width
                | #ANG | Angle, laboratory system | ADEG |
                | #E-CM | Energy of outgoing particle, c.m. system | MEV |
                | #DATA | Double diff.cross section d2/dA/dE
                |       | #+ 41-NB-93(6-C-13,X)2-HE-4,,DA/DE | MB/SR/M |
                | #DATA-ERR | Error in value of quantity, defined under ERR-ANALYS | MB/SR/M |
                #/Legend
ANG             E-CM          DATA          DATA-ERR
ADEG            MEV           MB/SR/MEV     MB/SR/MEV
25.             5.957         0.458
25.             7.069         1.177
25.             7.826         2.271
25.             8.938         2.989
25.             10.097        4.864         0.438
25.             10.991        6.991         0.501
25.             12.061        8.616         0.563
25.             12.954        10.680        0.688
25.             13.977        11.555        0.657
```

```
                #,SIBAR Silicon surface barrier detector
                #,SIBAR) Silicon surface barrier detector
METHOD          (EDE)
                #(EDE) Particle identification by 'E/Delta E' measurement
HISTORY         (20240103R) Data received from H.Kumawat (2024-01-03)
                (20231027C) VT+LV+On.
ENDBIB                  21           0
COMMON                   1           1          12
                #Legend: 1 x 1 x 12 : data columns * lines * column width
                | #EN | Energy of incident projectile, laboratory system | MEV | MeV |
                #/Legend
EN
MEV
65.
ENDCOMMON
ENDSUBENT               28           0
SUBENT           D6420002    20231027
BIB                     3           3
REACTION        (41-NB-93(6-C-13,X)2-HE-4,,DA/DE)
                # (41-NB-93(6-C-13,X)2-HE-4,,DA/DE)
                # Target:NB-93 #Projectile:6-C-13 #Reaction:6-C-13,X  #Process:X:Process unspecified  #Qu
                # Product: [2-HE-4]
ERR-ANALYS      (DATA-ERR) No information on the source of uncertainty
STATUS          (TABLE,,H.Kumawat+,J,PR/C,105,024611,2022) Fig.1(a-d)
                #(TABLE Data presented by authors
                #,H.Kumawat+
                #,J
                #,PR/C
                #,105
                #,024611
                #,2022)
ENDBIB                  3           0
NOCOMMON
DATA                    4         127          12
                #Legend: 4 x 127 x 12 : data columns * lines * column width
                | #ANG | Angle, laboratory system | ADEG | ang |
                | #E-CM | Energy of outgoing particle, c.m. system | MEV | Me |
                | #DATA | Double diff.cross section d2/dA/dE
                |       | #+ 41-NB-93(6-C-13,X)2-HE-4,,DA/DE | MB/SR/MEV | mil |
                | #DATA-ERR | Error in value of quantity, defined under ERR-ANALYS | MB/SR/MEV | mil |
                #/Legend
ANG             E-CM          DATA          DATA-ERR
ADEG            MEV           MB/SR/MEV     MB/SR/MEV
25.             5.9404        0.4567        0.1377
25.             6.9808        1.1626        0.2197
25.             7.8559        2.2837        0.3079
25.             8.9140        2.9481        0.3499
25.             9.9796        4.8581        0.4491
```

Numerical data received during proof-reading process

Numerical Data received during proof-read (EXFOR D6437)

```
                #(SIBAR) Silicon surface barrier detector
METHOD          (EDE)
                #(EDE) Particle identification by 'E/Delta E' measurement
STATUS          Request sent to H.Kumawat+ from G.Mohanto (2022-09-05)
HISTORY         (20231108C) VT+LV+On.
ENDBIB                    22           0
NOCOMMON
ENDSUBENT                 25           0
SUBENT           D6437002    20231108
BIB                       2           2
REACTION        (23-V-51(4-BE-9,EL)23-V-51,,DA,,RTH)
                # (23-V-51(4-BE-9,EL)23-V-51,,DA,,RTH)
                # Target:V-51 #Projectile:4-BE-9 #Reaction:4-BE-9,EL  #Process:EL:Elastic scat
                # Product: [23-V-51]
STATUS          (CURVE,,H.Kumawat+,J,PR/C,106,024602,2022) Fig. 2
                #(CURVE Data read from a curve
                #,H.Kumawat+
                #,J
                #,PR/C
                #,106
                #,024602
                #,2022)
ENDBIB                    2           0
NOCOMMON
DATA                      3          35          12
                #Legend: 3 x 35 x 12 : data columns * lines * column width
                  #EN       Energy of incident projectile, laboratory system   MEV
                  #ANG-CM   Angle, c.m. system                                 ADEG
                  #DATA     Differential cs d/dA rel.to Rutherf.scatt.         NO-DIM
                            #+ 23-V-51(4-BE-9,EL)23-V-51,,DA,,RTH
                #/Legend
EN              ANG-CM          DATA
MEV             ADEG            NO-DIM
25.3            11.9            1.065
25.3            15.4            1.051
25.3            23.8            0.971
25.3            27.2            0.956
25.3            29.5            0.995
25.3            35.3            1.082
25.3            38.7            1.025
25.3            41.0            0.937
```

```
                #(SIBAR) Silicon surface barrier detector
METHOD          (EDE)
                #(EDE) Particle identification by 'E/Delta E' measurement
HISTORY         (20240103R) Data received from H.Kumawat (2024-01-03)
                (20231108C) VT+LV+On.
ENDBIB                    22           0
NOCOMMON
ENDSUBENT                 25           0
SUBENT           D6437002    20231108
BIB                       2           2
REACTION        (23-V-51(4-BE-9,EL)23-V-51,,DA,,RTH)
                # (23-V-51(4-BE-9,EL)23-V-51,,DA,,RTH)
                # Target:V-51 #Projectile:4-BE-9 #Reaction:4-BE-9,EL  #Process:EL:Elastic scatt
                # Product: [23-V-51]
STATUS          (TABLE,,H.Kumawat+,J,PR/C,106,024602,2022) Fig.2
                #(TABLE Data presented by authors
                #,H.Kumawat+
                #,J
                #,PR/C
                #,106
                #,024602
                #,2022)
ENDBIB                    2           0
NOCOMMON
DATA                      4          36          12
                #Legend: 4 x 36 x 12 : data columns * lines * column width
                  #EN       Energy of incident projectile, laboratory system   MEV
                  #ANG-CM   Angle, c.m. system                                 ADEG
                  #DATA     Differential cs d/dA rel.to Rutherf.scatt.         NO-DI
                            #+ 23-V-51(4-BE-9,EL)23-V-51,,DA,,RTH
                  #DATA-ERR Error in value of quantity, defined under ERR-ANALYS NO-DI
                #/Legend
EN              ANG-CM          DATA            DATA-ERR
MEV             ADEG            NO-DIM          NO-DIM
25.3            11.8            1.0688          9.3453e-03
25.3            15.3            1.0551          9.4782e-03
25.3            23.5            0.9798          9.0325e-03
25.3            27.0            0.9643          9.4406e-03
25.3            29.3            1.0015          5.0805e-03
25.3            35.1            1.0860          0.0116
25.3            35.1            1.0863          5.1244e-03
25.3            38.5            1.0299          0.0122
25.3            40.8            0.9453          6.1870e-03
25.3            46.5            0.6879          5.2651e-03
25.3            49.9            0.6374          0.0120
```

Numerical data received during proof-reading process

Authors informed a normalization issue during proof-read (EXFOR 23853)

PHYSICAL REVIEW C **109**, 014620 (2024)

Measurement of γ-ray production via the neutron-^{16}O reaction using a 77 MeV quasimonoenergetic neutron beam

Y. Ashida,[1,*] H. Nagata,[2] M. Mori,[1] G. Collazuol,[3] D. Fukuda,[2] T. Horai,[2] F. Iacob,[3] A. Konaka,[4,5] Y. Koshio,[2] T. Nakaya,[1] C. Nantais,[6] T. Shima,[5] A. Suzuki,[7] Y. Takeuchi,[7] H. Tanaka,[8] R. Wendell,[1] and T. Yano[7]

[1]*Department of Physics, Kyoto University, Kyoto 606-8502, Japan*
[2]*Department of Natural Science and Technology, Okayama University, Okayama 700-8530, Japan*
[3]*Department of Physics and Astronomy, University of Padova, Padova 8-35131, Italy*
[4]*TRIUMF, Vancouver V6T 2A3, Canada*
[5]*Research Center for Nuclear Physics (RCNP), Osaka 567-0047, Japan*
[6]*Department of Physics, University of Toronto, Toronto M5S 1A7, Canada*
[7]*Department of Physics, Kobe University, Kobe 657-8501, Japan*
[8]*SLAC National Accelerator Laboratory, Menlo Park, California 94025, USA*

(Received 25 February 2019; revised 8 November 2022; accepted 13 December 2023; published 22 January 2024)

Understanding of γ-ray production via neutron interactions on oxygen is essential for the study of neutrino neutral-current quasielastic interactions in water Cherenkov detectors. A measurement of γ-ray production from such reactions was performed using a 77 MeV quasimonoenergetic neutron beam. Several γ-ray peaks, which are expected to come from neutron-^{16}O reactions, are observed and production cross sections are measured for nine γ-ray components of energies between 2 and 8 MeV. These are the first measurements at this neutron energy using a nearly monoenergetic beam.

DOI: 10.1103/PhysRevC.109.014620

Author found an issue with result normalization and they plan to resolve this soon and will issue an erratum for the paper.

Authors informed article typos during proof-read (EXFOR 33187)

```
REACTION    (92-U-233(N,F)ELEM/MASS,IND,FY,,SPA)
            # (92-U-233(N,F)ELEM/MASS,IND,FY,,SPA)
            # Target:U-233 #Projectile:N #Reaction:N,F  #Process:F:Fission  #Quantity:IND,FY:F
METHOD      (CHSEP)  Separation of iodine
            # (CHSEP) Chemical separation of products
DECAY-DATA ((1.)53-I-132-M,1.387HR,DG,772.6,0.14)
            ((101.)53-I-132-M,1.387HR,DG,667.7,0.139)
            ((2.)53-I-132-G,2.295HR,DG,772.6,0.756)
            ((102.)53-I-132-G,2.295HR,DG,667.7,0.987)
            # Decay-data: [0--0]
ERR-ANALYS (DATA-ERR) Uncertainty due to replicated measu
                                                        (4.
STATUS      (TABLE,,H.Naik+,J,NSE,197,1133,2023) Table I
            (COREL,33187004) Independent yield measured wit
             chemical separation
            # (TABLE Data presented by authors
            #,H.Naik+
            #,J
            #,NSE
            #,197
            #,1133
            #,2023)
            # (COREL Data correlated with another data set
            #,33187004) Link:http://www-nds.iaea.org/EXFOR/33
ENDBIB              11          0
NOCOMMON
DATA                 6          6          12
```

Nuclide	Half-Life	Gamma-Ray Energy (keV)	Gamma-Ray Abundance (%)	Cumulative Yield, Y_C or Independent Yield, Y_I (%)	Evaluated Yield ENDF/B-VIII.0	Evaluated Yield JEFF-3.3	Mass Chain Yield, Y_A (%)
$^{132}Sb^{m+g}$				1.221±0.051	1.180±0.542	1.392±0.210	2.955±0.123
^{132}Te	3.204 d	228.2	88	4.788±0.036	4.759±0.133	4.613±0.121	4.961±0.037
^{132g}I	2.295 h	772.6	75.6	4.975±0.065	4.940±3.161	4.804±0.125	4.993±0.065
		667.7	98.7	4.967±0.043			4.985±0.043
$^{132}I^{m}$	1.387 h	772.6	14	0.0726±.0026*s	0.0965±0.0618*	0.0862±0.0300*	
		667.7	13.9	0.0756±.0022*s			
$^{132}I^{g}$	2.295 h	772.6	75.6	0.0965±.0068*s	0.0965±0.0618*	0.1169±0.0407*	
		667.7	98.7	0.1025±.0082*s			
$^{132}I^{m+g}$				0.1736±.0086*	0.1930±0.0874*	0.2031±0.0506*	
^{133}Sb	2.34 min	1096.2	43	0.840±0.052	0.827±0.050	0.766±0.217	6.567±0.407
$^{133}Te^{m}$	55.4 min	912.7+914.7	66.22	3.447±0.107	3.417±0.137	3.232±0.152	
$^{133}Te^{g}$	12.5 min	312.1	62.4	2.146±0.131	2.210±0.508	2.483±0.152	
$^{133}Te^{m+g}$				5.593±0.169	5.627±0.526	5.715±0.215	7.873±0.202
^{133}I	20.83 h	529.9	87	5.871±0.032	5.894±3.772	5.989±0.126	5.871±0.032
^{134}Te	41.8 min	767.2	29.5	.034±0.066	4.038±0.113	3.770±0.228	8.245±0.135
		566	18.6	4.019±0.047			8.214±0.096

```
            #Legend: 6 x 6 x 12 : data columns * lines * column
```

#ELEMENT	Atomic number of element	NO-DIM
#MASS	Atomic mass of nuclide	NO-DIM
#ISOMER	Isomer for nuclide given	NO-DIM
#DATA	Independent fission-product yield #+ 92-U-233(N,F)ELEM/MASS,IND,FY,,SPA	PC/FIS
#DATA-ERR	Error in value of quantity, defined under ERR-ANALYS	PC/FIS
#DECAY-FLAG	Decay flag. See corresponding flag in BIB section	NO-DIM

```
            #/Legend
ELEMENT     MASS        ISOMER      DATA        DATA-ERR    DECAY-FLAG
NO-DIM      NO-DIM      NO-DIM      PC/FIS      PC/FIS      NO-DIM
53.         132.        1.          0.0726      0.0026      1.
53.         132.        1.          0.0756      0.0022      101.
53.         132.        0.          0.0965      0.0068      2.
53.         132.        0.          0.1025      0.0082      102.
53.         132.                    0.1736      0.0086
53.         134.                    2.166       0.136
```

Typo in reporting CHSEP could effect data interpretation.

Acknowledgement

I would like to thank the authors for providing their feedback on the entries, which has helped to improve the quality of the data:

- Sanjay Dhole, Pune University
- Moumita Maiti, IIT Roorkee
- M.M. Musthafa, University of Calicut
- H. Naik, BARC
- H. Kumawat, BARC

I would also like to thank Naohiko for their motivation and guidance in initiating this activity at the Indian Centre.

THANK YOU