

The Second IAEA Panel on Neutron  
Standard Reference Data 出席報告

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場 所 ウィーン

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プログラム (別紙)

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J.J.Schmidt (NDS, IAEA)

以上25名

議事の内容 (いづれ proceedings が出る予定である。)

1. 各国の Neutron Standard Reference Data に関する activity について

USA

Gulf Radiation Technology

$^3\text{He} (n, p)$ ,  $\text{Au} (n, \gamma)$  : concluded

$^{10}\text{B} (n, \alpha)$  (4-150 keV) : measured

$^{10}\text{B} (n, \alpha' \gamma)$  (4-1000 keV)

$^6\text{Li} (n, \alpha)$  : planned

Lawrence Livermore Laboratory

$\text{Au} (n, \gamma) / ^6\text{Li} (n, \alpha)$  (100 eV-1 MeV)

$\text{Au} (n, \gamma) / ^{235}\text{U} (n, f)$  : in progress

$^{235}\text{U} (n, f) / \text{H} (n, n)$  (50 keV-16 MeV) : in progress

ORNL

$^{235}\text{U} \sigma / ^{193}\text{Ir} (n, \alpha)$  ( $\leq 80$  keV) : in progress

$^{238}\text{U} (n, f)$  ( $\leq 0.5$  MeV) : in progress

$^6\text{Li} \sigma_T$  (20-500 keV) : in progress

$^{10}\text{B} (n, \alpha) / ^{10}\text{B} (n, \alpha)$  : planned

ANL

$^6\text{Li} \sigma_T$  (100-1500 keV) : completed

$^6\text{Li} (n, \alpha)$  (90-600 keV) : measured

$^{235}\text{U} \sigma$  (30 keV-3.5 MeV) : measured

$^{235}\text{U} (n, f)$  (higher MeV) : planned

$^{10}\text{B} (n, \alpha \gamma)$  (keV) : planned

LASL

$^{235}\text{U} (n, f) / \text{H} (n, n)$  (1-6 MeV) : measured

Univ. of Michigan

$^{235}\text{U}$   $\sigma$  (several points) : in progress  
 $^{239}\text{Pu}$   $\sigma$

$\bar{\gamma}$  of  $^{252}\text{Cf}$  planned

NBS

$^6\text{Li}$   $\sigma$  (total, scattering, capture) (1keV-1MeV) :  
planned

CSEWG

H (n, n),  $^3\text{He}$  (n, p),  $^{10}\text{B}$  (n,  $\alpha$ ), C (n, n),  $^{235}\text{U}$  (n, f)  
reviewed in ENDF/B-III

USSR ソ連は status report を出さず、代わりに最近出た Proceeding of Moscow Conference on Reference of Neutron Measurements を見てくれとの事であつた。

UK

Harwell

fission neutron spectrum (A.T.G.Ferguson, V.d.G.  
グループ) : measured

$^6\text{Li}$  (n,  $\alpha$ ),  $^{10}\text{B}$  (n,  $\alpha\gamma$ ) (D.B.Gayther, M.S.Coates  
LINACグループ) : measured

National Physical Lab.

neutron flux density standards (thermal to 19MeV,  
E.J.Axton) : measured

France

Cadarache

techniques of neutron flux measurements : in progrex

$^6\text{Li}$  (n,  $\alpha$ ) (20keV-1.7MeV) : measured

$^{10}\text{B}$  (n,  $\alpha$ ) (20keV-150keV) : measured

$^{235}\text{U}$  (n,  $\gamma$ ) : in progress

$^{197}\text{Au}$  (n,  $\gamma$ ) (70-550keV) : measured

Bruyères-le-Châtel

neutron flux measurements (a few keV-15MeV) :

planned

$\bar{\gamma}$  for  $^{252}\text{Cf}$  : planned

$\bar{\gamma}$  for  $^{238}\text{U}$  and  $^{239}\text{Pu}$  over resonance : in progress

#### Sweden

review of  $^{235}\text{U}$  (n, f) data (10-200keV)

evaluation of  $\bar{\gamma}$  for  $^{252}\text{Cf}$

fission neutron spectrum of  $^{235}\text{U}$  : continued

#### Italy

この分野での activity なし。

#### Germany

Panel に提出された論文は, neutron flux measurements (0.5-1.2 MeV) : measured

$^{235}\text{U}$  (n, f) (0.5-1.2 MeV) : measured

#### EURATOM

Panel に提出された論文は, neutron flux measurement (250 keV T (p, n) : measured

Review of  $^3\text{H}$  (n, p) and  $^3\text{He}$  (n, d)

$\bar{\gamma}$  of  $^{235}\text{U}$  (0.40 MeV) : measured

#### Japan

evaluation of  $^6\text{Li}$  (n,  $\alpha$ ) and  $^{235}\text{U}$  (n, f) in progress

#### 2. 個々の反応に関する review と詳細な discussion について

各人が持寄った論文 (別添1) の紹介が行われた後, 反応の断面積と fission neutron spectrum について夫々の working group がつくられ, 詳細な discussion のあと, Recommendation and Observation がつくられ, 並び全体会議でこれを議論した。

別添1. Papers submitted to the Second IAEA Panel on Neutron Standard Reference Data (Nov.1972)

別添1

Papers submitted to the Second IAEA Panel on Neutron Standard  
Reference Data (Nov. 1972)

France

1. J. L. Leroy, I. Szabo and J. Y. Tocquer (CEN/Cadarache):  
Precise neutron flux monitoring by  $T(p,n)^3\text{He}$  associated particle counting between 0.25 and 1.3 MeV
2. E. Fort and J. P. Marquette (CEN/Cadarache):  
Experimental methods used at Cadarache to determine the  $^6\text{Li}(n,\alpha)$  cross section between 20 keV and 1700 keV
3. E. Fort (CEN/Cadarache):  
Analysis of experimental methods and proposal of recommended values for  $^6\text{Li}(n,\alpha)T$  reaction between 20 keV and 1700 keV

EURATOM

1. M. M. Islam and H. H. Knitter (CBNM):  
Measurement of the prompt fission neutron energy spectrum of  $^{235}\text{U}$  at an incident neutron energy of 0.40 MeV and its shape correction
2. A. Paulsen and H. Liskien (CBNM):  
Differential cross section for the reactions  $^3\text{He}(n,p)T$  and  $^3\text{He}(n,d)D$
3. A. Paulsen and H. Liskien (CBNM) and M. Cosack (PTB, Germany):  
Flux density measurements for 250 keV neutrons from the  $T(p,n)$  source reaction

Germany

1. F. Käppeler (KFK):  
A measurement of the neutron fission cross section of  $^{235}\text{U}$  between 0.5 and 1.2 MeV
2. F. Käppeler (KFK):  
Absolute neutron flux determination in the energy region between 0.4 and 2 MeV

U.K.

1. E. J. Axton (National Physical Laboratory):  
International Intercomparison of fast neutron flux density sponsored by Bureau Internationale des Poids et Mesures
2. J. B. Hunt and J. C. Robertson (National Physical Laboratory):  
The long counter as a secondary standard for neutron flux density

3. J. C. Robertson, T. B. Ryves and J. B. Hunt (National Physical Lab.):  
A collimated vanadium bath system for the relative measurement of keV neutron flux
4. J. C. Robertson, B. N. Audric and P. Kolkowski (National Physical Lab.):  
The  $^{56}\text{Fe}(n,p)^{56}\text{Mn}$  and  $^{27}\text{Al}(n,\alpha)^{24}\text{Na}$  cross sections at 14.78 MeV
5. E. J. Axton (National Physical Lab.):  
 $\bar{v}$  of  $^{252}\text{Cf}$
6. T. B. Ryves (National Physical Lab.):  
Suitability of Indium as an activation standard for keV neutrons
7. M. S. Coates, G. J. Hunt and C. A. Uttley (Harwell):  
A preliminary measurement of the relative  $^{10}\text{B}(n,\alpha\gamma)$  cross-section
8. M. S. Coates, G. J. Hunt and C. A. Uttley (Harwell):  
Measurements of the relative  $^6\text{Li}(n,\alpha)$  cross-section in the energy range 1 keV  $\rightarrow$  500 keV
9. M. S. Coates, D. B. Gayther, G. J. Hunt and D. A. Boyce (Harwell):  
Experimental test of the calculated efficiency of the Harwell black detector at high neutron energies using the Harwell long counter
10. D. B. Gayther, D. A. Boyce and J. B. Brisland (Harwell):  
Measurement of the  $^{235}\text{U}$  fission cross-section in the energy range 1 keV to 1 MeV

U.S.A.

1. B. C. Diven (LASL):  
Progress report on LASL measurement of the  $^{235}\text{U}$  fission cross section from 1 to 6 MeV
2. L. Stewart (LASL):  
The  $^3\text{He}(n,p)\text{T}$ ,  $^6\text{Li}(n,\alpha)\text{T}$  and  $^{10}\text{B}(n,\alpha)$  standard cross sections
3. W. P. Poenitz (ANL):  
Two flat response detectors for absolute and relative neutron flux measurements
4. W. P. Poenitz and J. W. Meadows (ANL):  
The  $^6\text{Li}(n,\alpha)$  cross section
5. W. P. Poenitz (ANL):  
Measurements of the U-235 fission cross section in the fast neutron energy range

6. R. W. Peelle (ORNL):

ORELA measurements of the  $^{235}\text{U}(n,f)$  cross section to 100 keV

Australia

1. J. W. Boldeman (Lucas Heights):

Prompt neutron yield from the spontaneous fission of  $^{252}\text{Cf}$

U.S.S.R.

1. V. A. Konshin and N. N. Nikolaev (Obninsk):

Evaluation of the  $^{235}\text{U}$  fission cross-section

Sweden

1. L. G. Stromberg (Research Institute of National Defence):

Fission cross section --- A review of experimental data

2. P. I. Johanson, B. Holmqvist and T. Wieldling (Studsvik):

An experimental study of the prompt fission neutron spectrum induced by 0.5 MeV incident neutrons on  $^{235}\text{U}$

3. H. Condé (Research Institute of National Defence):

A summary of the absolute measurements of  $\bar{\nu}$  for the spontaneous fission of  $^{252}\text{Cf}$

4. B. Lundberg, L. G. Stromberg and H. Condé (Research Institute of National Defence):

Gamma rays from inelastic neutron scattering in oxygen

8/15/72

Draft Agenda for the Second IAEA Panel on  
Neutron Standard Reference Data

Vienna, 20 - 24 November 1972

- I. Opening of the Panel
- II. Reports by participants on:-
  - (a) the present and planned neutron standard reference data activities in their countries; and
  - (b) the relationship of these activities to the national nuclear energy requirements
- III. Review and detailed discussions of:-
  - A. Methods and Techniques of Neutron Flux Measurements
  - B. Light Element Standards
    1. Li-6(n, $\alpha$ ) cross section for fast neutrons
    2. B-10(n, $\alpha$ ) and B-10(n, $\alpha\gamma$ ) cross sections for fast neutrons
    3. He-3(n,p) cross section for fast neutrons
  - C. Fission and Capture Standards
    1. U-235 fast fission cross section
    2. Fast neutron capture cross sections of Au-197 and other appropriate capture standards
    3.  $\bar{\nu}$  for Cf-252
    4. The 2200 m/sec fission and capture cross sections of the fissile nuclides
    5. Fission neutron spectra
- IV. Criteria for standards for neutron data measurements; quantities in addition to those considered under item III.
- V. Formation of Working Groups to summarize the current status of the topics discussed and to draft recommendations and conclusions of the panel.
- VI. Discussion of the conclusions and recommendations of the panel.