

CONTENTS

Summary of Session I	9
Summary of Session II	13
Summary of Session III	16
Summary of Session IV	18
Summary of Session V	23
Summary of Session VI	26
Summary of Session VII	32
Summary of Session VIII	35
Summary of Session IX	37
Summary of Working Group Session I	40
Summary of Working Group Session II	42
Summary of Working Group Session III	45
Summary report	48
Specific recommendations to the IAEA (Nuclear Data Section)	55
Programme of the meeting	57

SESSION I

Requirements for nuclear standard reference data from the users' point of view	65
<i>A.J. Deruytter</i>	
The neutron cross-section standards evaluations for ENDF/B-VI	77
<i>A.D. Carlson, W.P. Poenitz, G.M. Hale, R.W. Peelle</i>	
INDC/NEANDC Standards File, Status Report	84
<i>H. Condé</i>	
IAEA Standards File: some comments and recommendations	89
<i>M.V. Blinov, S.K. Vasil'ev, V.D. Dmitriev, Yu.A. Nemilov, V.P. Chechev, E.A. Shlyamin, V.I. Shpakov, A.V. Sorokina, A.A. Goverdovskij, V.N. Kornilov, V.A. Tolstikov, V.A. Kon'shin, E.Sh. Sukhovitskij</i>	

SESSION II

Theoretical calculations of the ${}^6\text{Li}(n, t)$ cross-section	103
<i>G.M. Hale</i>	
The data for the neutron interactions with ${}^6\text{Li}$ and ${}^{10}\text{B}$	112
<i>W.P. Poenitz</i>	
Measurement of the ${}^6\text{Li}(n, \alpha)/{}^{10}\text{B}(n, \alpha)$ ratio with a xenon gas scintillator	118
<i>C. Bastian, H. Riemenschneider</i>	
Determination of the neutron detection efficiency of a thick ${}^6\text{Li}$ glass detector by measurement and by Monte Carlo calculation	122
<i>A. Lajtai, J. Kecskeméti, V.N. Kononov, E.D. Poletaev, M.V. Bohovko, L.E. Kazakov, V.M. Timohov, P.P. Dyachenko, L.S. Kutsaeva, E.A. Seregina</i>	
Proposal for measuring the ratio of the neutron standards ${}^6\text{Li}(n, \alpha){}^3\text{H}$ and ${}^{10}\text{B}(n, \alpha){}^7\text{Li}$ by the quasi-absolute method using the time-reversed reactions, and the ratios of these standards to the ${}^3\text{He}(n, p){}^3\text{H}$ reaction in the 0.25 to 9 MeV neutron energy range	130
<i>M. Drosig</i>	

SESSION III

Evaluation of the ${}^{27}\text{Al}(n, \alpha)$ reaction cross-section in energy range 5.5 MeV – 20 MeV	135
<i>N.V. Kornilov, N.S. Rabotnov, S.A. Badikov, E.V. Gay, A.B. Kagalenko, V.I. Trykova</i>	
Neutron-capture cross-section measurements for ${}^{197}\text{Au}$ and ${}^{115}\text{In}$ in the energy region 2.0–7.7 MeV using the activation technique	143
<i>P. Andersson, R. Zorro, I. Bergqvist</i>	

Influence of target-scattered neutrons on cross-section measurements	144
<i>H. Lesiecki, M. Cosack, B.R.L. Siebert</i>	
Comments to the evaluation of fast neutron radiation capture by ^{197}Au given in the book of Standard Nuclear Data	147
<i>V.A. Tolstikov</i>	

SESSION IV

Review of recent measurements of the U-235 fission cross-section and fission fragment angular distribution between 0.1 and 20 MeV	151
<i>M.G. Sowerby, B.H. Patrick</i>	
New results on the $^{235}\text{U}(n, f)$ fission integrals	156
<i>C. Wagemans, A.J. Deruytter</i>	
Absolute measurements of the $^{235}\text{U}(n, f)$ cross-section for neutron energies from 0.3 to 3 MeV	162
<i>A.D. Carlson, J.W. Behrens, R.G. Johnson, G.E. Cooper</i>	
AEP measurements of $^{235}\text{U}(n, f)$ and $^{238}\text{U}(n, f)$ cross-section	167
<i>Hanrong Yuan</i>	
Absolute measurement of the ^{235}U fission cross-section at 4.45 MeV neutron energy using the time-correlated associated particle method (TCAPM)	174
<i>R. Arlt, C.M. Herbach, M. Josch, G. Musiol, H.G. Ortlepp, G. Pausch, W. Wagner, L.V. Drapchinsky, E.A. Ganza, O.I. Kostochkin, S.S. Kovalenko, V.I. Shpakov</i>	
Fission fragment mass, kinetic energy and angular distribution for $^{235}\text{U}(n, f)$ in the neutron energy range from thermal to 6 MeV	181
<i>Ch. Straede, C. Budtz-Jørgensen, H.-H. Knitter</i>	
The ^{238}U fission cross-section, threshold to 20 MeV	191
<i>Y. Kanda</i>	
Neutron-induced fission cross-section of ^{238}U in the second plate region	198
<i>A.A. Goverdovskij</i>	
Fission ratios involving ^{238}U , ^{237}Np , ^{239}Pu and ^{235}U fission cross-sections	200
<i>Y. Kanda, Y. Uenohara</i>	

SESSION V

Evaluation of the thermal neutron constants of ^{233}U , ^{235}U , ^{239}Pu and ^{241}Pu and the fission neutron yield of ^{252}Cf	214
<i>E.J. Axton</i>	
Sub-thermal fission cross-section measurements	235
<i>C. Wagemans, A.J. Deruytter</i>	
A least squares fit of thermal data for fissile nuclei	238
<i>M. Divadeenam, J.R. Stehn</i>	

SESSION VI

Nubar for the spontaneous fission of ^{252}Cf	242
<i>J.W. Boldeman, M.G. Hines</i>	
A re-evaluation of the average prompt neutron emission multiplicity (nubar) values from fission of uranium and transuranium nuclides	248
<i>N.E. Holden, M.S. Zucker</i>	
Measurement and theoretical calculation of the ^{252}Cf spontaneous-fission neutron spectrum	255
<i>H. Märten, D. Seeliger</i>	
Differential and integral comparisons of three representations of the prompt neutron spectrum for the spontaneous fission of ^{252}Cf	267
<i>D.G. Madland, R.J. LaBauve, J.R. Nix</i>	
Calculation of the $^{252}\text{Cf}(sf)$ neutron spectrum in the framework of a complex cascade evaporation model (CEM)	278
<i>H. Märten, D. Seeliger</i>	
Statistical calculation of the ^{252}Cf spontaneous fission prompt neutron spectrum	280
<i>B.F. Gerasimenko, V.A. Rubchenya</i>	

Recent developments in the investigation of ^{252}Cf spontaneous fission prompt neutron spectrum	281
<i>M.V. Blinov</i>	
State and first results of the evaluation of the Cf-252 fission neutron spectrum	294
<i>W. Mannhart</i>	
Measurements of the prompt neutron fission spectrum from the spontaneous fission of ^{252}Cf	304
<i>J.W. Boldeman, B.E. Clancy, D. Culley</i>	
New measurement of the ^{252}Cf (sf) neutron spectrum in the high-energy range	310
<i>H. Märten, D. Richter, D. Seeliger, R. Böttger, W.D. Fromm</i>	
Prompt neutron spectra for energy range 30 keV–4 MeV from fission of ^{233}U , ^{235}U and ^{239}Pu induced by thermal neutrons	312
<i>A. Lajtai, J. Kecskeméti, J. Sáfár, P.P. Dyachenko, V.M. Piksaikin</i>	
Neutron emission from the spontaneous fission of ^{252}Cf	315
<i>C. Budtz-Jørgensen, H.-H. Knitter, R. Vogt</i>	
Measurement of the ^{235}U fission cross-section for ^{252}Cf spontaneous fission neutrons	320
<i>I.G. Schröder, L. Linpei, D.M. Gilliam, C.M. Eisenhauer</i>	

SESSION VII

International fluence rate intercomparison for 2.5, 5.0 and 14 MeV neutrons	324
<i>H. Liskien, V.E. Lewis</i>	
Some practical problems in the standardization of monoenergetic fast neutron fluences	328
<i>T. Michikawa, K. Kudo, T. Kinoshita</i>	
Measurement of the NBS black neutron detector efficiency at 2.3 MeV	332
<i>K.C. Duvall, A.D. Carlson, O.A. Wasson</i>	
Neutron measurements at the Bureau international des poids et mesures	338
<i>V.D. Huynh</i>	
Neutron fluence measurements with a proton recoil telescope	340
<i>H.J. Brede, M. Cosack, H. Lesiecki, B.R.L. Siebert</i>	
Flux measurement techniques for white neutron sources	345
<i>D.B. Gayther</i>	
A neutron detector comparison in the GELINA spectrum	360
<i>J.A. Wartena, H.-H. Knitter, C. Budtz-Jørgensen, H. Bax, Cl.-D. Bürkholz, R. Pijpstra, R. Vogt</i>	
Flux detector intercomparisons: High efficiency detectors – Part II	371
<i>F. Corvi, H. Riemenschneider, T. Van der Veen</i>	

SESSION VIII

Neutron energy standards	376
<i>G.D. James</i>	
The energy calibration procedure of time-of-flight spectrometers for fission neutron spectrum measurements	380
<i>T. Wiedling</i>	
Neutron energies selected by ISO for the calibration of radiation protection instruments	388
<i>M. Cosack</i>	

SESSION IX

Actinide half-lives as standards for nuclear data measurements: Current status	390
<i>C.W. Reich</i>	
Total and spontaneous fission half-lives of the uranium and plutonium nuclides	396
<i>N.E. Holden</i>	
Total and spontaneous fission half-lives of the americium and curium nuclides	400
<i>N.E. Holden</i>	
Emission probabilities of selected gamma rays for radionuclides used as detector-calibration standards.....	403
<i>R. Vaninbroukx</i>	
Emission probabilities of selected X-rays for radionuclides used as detector-calibration standards	412
<i>W. Bambynek</i>	

WORKING GROUP SESSION I

The simultaneous evaluation of interrelated cross-sections by generalized least-squares and related data file requirements	426
<i>W.P. Poenitz</i>	
A simultaneous evaluation of some important cross-sections at 14.70 MeV	431
<i>T.B. Ryves</i>	
Properties of Cf fission fragment detection systems used for neutron time-of-flight measurements	433
<i>H. Klein, R. Böttger, A. Chalupka, B. Strohmaier</i>	

WORKING GROUP SESSION II

Standards for the fission yields measurements	437
<i>J. Blachot</i>	
Cross-section measurements of $^{56}\text{Fe}(n, p)^{56}\text{Mn}$ and $^{27}\text{Al}(n, \alpha)^{24}\text{Na}$ between 14.0 and 19.9 MeV	449
<i>K. Kudo, T. Michikawa, T. Kinoshita, Y. Hino, Y. Kawada</i>	
Neutron production using gas targets	454
<i>H. Klein</i>	
Candidates for fast neutron standards among neutron producing reactions	456
<i>M. Drog</i>	
About ^{237}Np fission cross-section standardization	465
<i>A.A. Goverdovskij</i>	

WORKING GROUP SESSION III

Application of the dual thin scintillator neutron flux monitor in a $^{235}\text{U}(n, f)$ cross-section measurement... ..	467
<i>M.S. Dias, A.D. Carlson, R.G. Johnson, O.A. Wasson</i>	
Investigation for a precise and efficient neutron fluence detector based on the n-p scattering process	470
<i>H.-H. Knitter, C. Budtz-Jørgensen, H. Bax</i>	
Assaying of ^{235}U fission layers for nuclear measurements with a gridded ionization chamber	476
<i>C. Budtz-Jørgensen, H.-H. Knitter</i>	
Final results of the international ^{235}U sample intercomparison and the half-life of ^{234}U	485
<i>W.P. Poenitz, J.W. Meadows</i>	
List of participants	490