

# **5th International Workshop on Nuclear Data Evaluation for Reactor Applications (WONDER-2018)**

EPJ Web of Conferences Volume 211 (2019)

Aiz-en-Provence, France  
8 - 12 October 2018

ISBN: 978-1-5108-8830-2

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

This work is licensed under a Creative Commons Attribution 4.0 International License. License details:  
<http://creativecommons.org/licenses/by/4.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2020)

For additional information, please contact EDP Sciences – Web of Conferences at the address below.

EDP Sciences – Web of Conferences  
17, Avenue du Hoggar  
Parc d'Activité de Courtabœuf  
BP 112  
F-91944 Les Ulis Cedex A  
France

Phone: +33 (0) 1 69 18 75 75

Fax: +33 (0) 1 69 28 84 91

[contact-edps@webofconferences.org](mailto:contact-edps@webofconferences.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

<b>PREFACE</b> .....	1
<i>Serot O., Chebboubi A.</i>	
<b>SUMMATION CALCULATIONS FOR REACTOR ANTINEUTRINO SPECTRA, DECAY HEAT AND DELAYED NEUTRON FRACTIONS INVOLVING NEW TAGS DATA AND EVALUATED DATABASES</b> .....	2
<i>Estienne M., Fallot M., Giot L., Guadilla-Gomez V., Le Meur L., Porta A., Algora A., Tain J. -L., Briz J. A., Agramunt J., Åystö J., Cormon S., Cucoanes A., Eronen T., Fraile L. M., Ganoglu E., Gelletly W., Gorelov D., Hakala J., Jokinen A., Jordan M. D., Kankainen A., Kolhinen V. S., Koponen J., Lebois M., Martinez T., Monserrate M., Montaner-Pizá A., Moore I., Nácher E., Orrigo S. E. A., Penttilä H., Pohjalainen I., Reinikainen J., Reponen M., Rinta-Antila S., Rytönen K., Rubio B., Shiba T., Sonnenschein V., Sonzogni A. A., Valencia E., Vedia V., Voss A., Weber C., Wilson J. N., Zakari-Issoufou A. -A.</i>	
<b>ENERGY DEPENDENCE OF DELAYED-NEUTRON DATA</b> .....	11
<i>Foligno Daniela, Leconte Pierre</i>	
<b>TESTING COMPOUND NUCLEUS HYPOTHESIS ACROSS THE <sup>17</sup>O NUCLEUS EXCITATION</b> .....	18
<i>Nizigama Aloys, Tamagno Pierre, Bouland Olivier</i>	
<b>STUDY OF THE PHOTON STRENGTH FUNCTIONS AND LEVEL DENSITY IN THE GAMMA DECAY OF THE N + <sup>234</sup>U REACTION</b> .....	26
<i>Moreno-Soto J., Berthoumieux E, Dupont E, Günsing F, Serot O, Litaize O, Diakaki M, Chebboubi A, Dridi W, Valenta S, Kricka M., Aberle O, Alcayne V, Andrzejewski J, Audouin L, Bécaries V., Babiano-Suarez V., Bacak M, Barbagallo M, Benedikt Th, Bennett S, Billowes J, Bosnar D, Brown A, Busso M, Caamaño M., Caballero-Ontanaya L., Calviño F., Calviani M, Cano-Ott D., Casanovas A, Cerutti F, Chiaveri E, Colonna N, Cortés G., Cortés-Giraldo M. A., Cosentino L, Cristallo S, Damone L. A, Davies P. J, Dietz M, Domingo-Pardo C., Dressler R, Ducasse Q, Durán I., Elme Z, Fernández-Domínguez B., Ferrari A, Finocchiaro P, Furman V, Göbel K., Gawlik A, Gilardoni S, Gonçalves I. F., González-Romero E., Guerrero C, Heinitz S, Heyse J, Jenkins D. G, Junghans A, Käppeler F., Kadi Y, Kimura A, Knapova I, Kokkoris M, Kopatch Y, Kurtulgil D, Ladarescu I, Lederer-Woods C., Lonsdale S. J, Macina D, Manna A, Martínez T., Masi A, Massimi C, Mastinu P, Mastromarco M, Mauger E. A, Mazzone A, Mendoza E, Mengoni A, Michalopoulou V, Milazzo P. M, Mingrone F, Musumarra A, Negret A, Ogállar F., Oprea A, Patronis N, Pavlik A, Perkowski J, Persanti L, Petrone C, Pirovano E, Porras I, Praena J, Quesada J. M, Ramos-Doval D., Rauscher T, Reifarth R, Rochman D, Sabaté-Gilarte M., Saxena A, Schillebeeckx P, Schumann D, Sekhar A, Simone S, Smith A. G, Sosnin N. V, Sprung P, Stamatopoulos A, Tagliente G, Tain J. L, Tarifeño-Saldivia A., Tassan-Got L., Tsinganis A, Ulrich J, Urlass S, Vannini G, Variale V, Vaz P, Ventura A, Vescovi D, Vlachoudis V, Vlastou R, Wallner A, Woods P. J, Wright T, Žugec P.</i>	
<b>HIGH-RESOLUTION EVALUATION OF THE U5(N,F) CROSS SECTION FROM 3 KEV TO 30 KEV</b> .....	35
<i>Duran I., Paradela C., Caamaño M., Cabanelas P., Tassan-Got L., Audouin L.</i>	
<b>STUDY OF THE (N,<math>\gamma</math>F) PROCESS ON <sup>239</sup>PU</b> .....	44
<i>Leal-Cidoncha Esther, Noguere Gilles, Bouland Olivier, Serot Olivier</i>	
<b>TRENDS ON MAJOR ACTINIDES FROM AN INTEGRAL DATA ASSIMILATION</b> .....	51
<i>Rimpault Gerald, Huy Virginie, Noguère Gilles</i>	
<b>TOTAL MONTE CARLO ACCELERATION FOR THE PETALE EXPERIMENTAL PROGRAMME IN THE CROCUS REACTOR</b> .....	59
<i>Laureau Axel, Lamirand Vincent, Rochman Dimitri, Pautz Andreas</i>	
<b>AN EXPERIMENTAL PROGRAMME OPTIMIZED WITH UNCERTAINTY PROPAGATION: PETALE IN THE CROCUS REACTOR</b> .....	64
<i>Lamirand Vincent, Laureau Axel, Rochman Dimitri, Perret Gregory, Gruel Adrien, Leconte Pierre, Blaise Patrick, Pautz Andreas</i>	
<b>IMPACT OF DELAYED NEUTRON CONSTANTS ON REACTIVITY EFFECTS MEASURED IN A FAST REACTOR</b> .....	69
<i>Krásá Antonín, Kochetkov Anatoly, Messaoudi Nadia, Stankovskiy Alexey, Vittiglio Guido, Wagemans Jan</i>	
<b>NEUTRON INELASTIC SCATTERING OF <sup>232</sup>TH: MEASUREMENTS AND BEYOND</b> .....	78
<i>Party Eliot., Borcea Catalin., Dessagne Philippe., Doligez Xavier., Henning Grégoire., Kerveno Maëlle., Negret Alexandru., Nyman Markus., Olacel Adina., Plompen Arjan.</i>	

**FISSION PROGRAM AT N\_TOF** ..... 85

*Tassan-Got L., Colonna N., Diakaki M., Eleme Z., Manna A., Sekhar A., Stamatopoulos A., Aberle O., Alcayne V., Amaducci S., Andrzejewski J., Audouin L., Babiano-Suarez V., Bacak M., Barbagallo M., Bennett S., Berthoumieux E., Bosnar D., Brown A. S., Busso M., Caamaño M., Caballero L., Calviani M., Calviño F., Cano-Ott D., Casanovas A., Cerutti F., Chiaveri E., Cortés G. P., Cortés-Giraldo M. A., Cosentino L., Cristallo S., Damone L. A., Davies P. J., Dietz M., Domingo-Pardo C., Dressler R., Ducasse Q., Dupont E., Durán I., Fernández-Domínguez B., Ferrari A., Ferro-Gonçalves I., Finocchiaro P., Furman V., Garg R., Gawlik A., Gilardoni S., Göbel K., González-Romero E., Guerrero C., Günsing F., Heinitz S., Heyse J., Jenkins D. G., Jiri U., Junghans A., Kadi Y., Käppeler F., Kimura A., Knapová I., Kokkoris M., Kopatch Y., Krťicka M., Kurtulgil D., Ladarescu I., Lederer-Woods C., Lerendegui-Marco J., Lonsdale S.-J., Macina D., Martínez T., Masi A., Massimi C., Mastinu P. F., Mastromarco M., Maugeri E., Mazzone A., Mendoza E., Mengoni A., Michalopoulou V., Milazzo P. M., Millán-Callado M. A., Mingrone F., Moreno-Soto J., Musumarra A., Negret A., Ogállar F., Oprea A., Patronis N., Pavlik A., Perkowski J., Petrone C., Piersanti L., Pirovano E., Porras I., Praena J., Quesada J. M., Ramos Doval D., Reifarh R., Rochman D., Rubbia C., Sabaté-Gilarte M., Saxena A., Schillebeeckx P., Schumann D., Smith A. G., Sosnin N., Sprung P., Tagliente G., Tain J. L., Tarifeño-Saldívia A. E., Thomas B., Torres-Sánchez P., Tsinganis A., Ullrich S., Valenta S., Vannini G., Variale V., Vaz P., Ventura A., Vescovi D., Vlachoudis V., Vlastou R., Wallner A., Woods P. J., Wright T. J., Žugec P.*

**PRELIMINARY RESULTS ON THE 233U CAPTURE CROSS SECTION AND ALPHA RATIO MEASURED AT N\_TOF (CERN) WITH THE FISSION TAGGING TECHNIQUE** ..... 94

*Bacak M., Aiche M., Bélier G., Berthoumieux E., Diakaki M., Dupont E., Günsing F., Heyse J., Kopecky S., Laurent B., Leeb H., Mathieu L., Schillebeeckx P., Serot O., Taieb J., Vlachoudis V., Aberle O., Andrzejewski J., Audouin L., Balibrea J., Barbagallo M., Becvár F., Billowes J., Bosnar D., Brown A., Caamaño M., Calviño F., Calviani M., Cano-Ott D., Cardella R., Casanovas A., Cerutti F., Chen Y. H., Chiaveri E., Colonna N., Cortés G., Cortés-Giraldo M. A., Cosentino L., Damone L. A., Domingo-Pardo C., Dressler R., Durán I., Fernández-Domínguez B., Ferrari A., Ferreira P., Finocchiaro P., Furman V., Göbel K., García A. R., Gawlik A., Gilardoni S., Glodariu T., Gonçalves I. F., González-Romero E., Griesmayer E., Guerrero C., Harada H., Heinitz S., Jenkins D. G., Jericha E., Käppeler F., Kadi Y., Kalamara A., Kavragin P., Kimura A., Kivel N., Knapova I., Kokkoris M., Krťicka M., Kurtulgil D., Leal-Cidoncha E., Lederer C., Lerendegui-Marco J., Meo S. Lo, Lonsdale S. J., Macina D., Manna A., Marganiec J., Martínez T., Masi A., Massimi C., Mastinu P., Mastromarco M., Maugeri E. A., Mazzone A., Mendoza E., Mengoni A., Milazzo P. M., Mingrone F., Musumarra A., Negret A., Nolte R., Oprea A., Patronis N., Pavlik A., Perkowski J., Porras I., Praena J., Quesada J. M., Radeck D., Rauscher T., Reifarh R., Rubbia C., Ryan J. A., Sabaté-Gilarte M., Saxena A., Schumann D., Sedyshev P., Smith A. G., Sosnin N. V., Stamatopoulos A., Tagliente G., Tain J. L., Tarifeño-Saldívia A., Tassan-Got L., Valenta S., Vannini G., Variale V., Vaz P., Ventura A., Vlastou R., Wallner A., Warren S., Weiss C., Woods P. J., Wright T., Žugec P.*

**MEASUREMENT OF THE 244CM AND 246CM NEUTRON-INDUCED CAPTURE CROSS SECTIONS AT THE N\_TOF FACILITY** ..... 103

*Alcayne V., Kimura A., Mendoza E., Cano-Ott D., Martínez T., Aberle O., Andrzejewski J., Audouin L., Bécáres V., Bacak M., Barbagallo M., Becvár F., Bellia G., Berthoumieux E., Billowes J., Bosnar D., Brown A., Busso M., Caamaño M., Caballero-Ontanaya L., Calviño F., Calviani M., Casanovas A., Cerutti F., Chen Y. H., Chiaveri E., Colonna N., Cortés G., Cortés-Giraldo M. A., Cosentino L., Cristallo S., Damone L. A., Diakaki M., Dietz M., Domingo-Pardo C., Dressler R., Dupont E., Durán I., Eleme Z., Fernández-Domínguez B., Ferrari A., Finocchiaro P., Furman V., Göbel K., Gawlik A., Gilardoni S., Glodariu T., Gonçalves I. F., González-Romero E., Guerrero C., Günsing F., Harada H., Heinitz S., Heyse J., Jenkins D. G., Käppeler F., Kadi Y., Katabuchi T., Kivel N., Knapova I., Kokkoris M., Kopatch Y., Krťicka M., Kurtulgil D., Ladarescu I., Lederer-Woods C., Lerendegui-Marco J., Meo S. Lo, Lonsdale S. J., Macina D., Manna A., Masi A., Massimi C., Mastinu P., Mastromarco M., Matteucci F., Maugeri E. A., Mazzone A., Mengoni A., Michalopoulou V., Milazzo P. M., Mingrone F., Musumarra A., Negret A., Nolte R., Ogállar F., Oprea A., Patronis N., Pavlik A., Perkowski J., Piersanti L., Porras I., Praena J., Quesada J. M., Radeck D., Ramos-Doval D., Rauscher T., Reifarh R., Rochman D., Sabaté-Gilarte M., Saxena A., Schillebeeckx P., Schumann D., Simone S., Smith A. G., Sosnin N. V., Stamatopoulos A., Tagliente G., Tain J. L., Talip T., Tarifeño-Saldívia A., Tassan-Got L., Tsinganis A., Ullrich J., Ullrich S., Valenta S., Vannini G., Variale V., Vaz P., Ventura A., Vescovi D., Vlachoudis V., Vlastou R., Wallner A., Woods P. J., Wright T., Žugec P.*

**ABSOLUTE CROSS SECTION MEASUREMENTS OF <sup>238</sup>U(N,F) AND <sup>237</sup>Np(N,F) IN THE NEUTRON ENERGY RANGE 1-2.4 MEV** ..... 111

*Salvador-Castiñeira Paula, Hamsch Franz-Josef, Göök Alf, Vidali Marzio, Hawkes Nigel P., Oberstedt Stephan, Roberts Neil J., Taylor Graeme C., Thomas David J.*

**DEVELOPMENT OF A GASEOUS PROTON-RECOIL DETECTOR FOR NEUTRON FLUX MEASUREMENTS BETWEEN 0.2 AND 2 MEV NEUTRON ENERGY** ..... 117

*Marini P., Mathieu L., Aiche M., Chiron T., Hellmuth P., Pedroza J.-L., Kessedjian G., Czajkowski S., Jurado B., Tsekanovich I.*

**SYSTEMATIC MEASUREMENTS OF PROMPT FISSION  $\gamma$  RAYS – AND WHAT THEY TELL US ABOUT FISSION FRAGMENT DE-EXCITATION** ..... 124

*Oberstedt Andreas, Gatera Angélique, Göök Alf, Oberstedt Stephan*

**PERFORMANCE VALIDATION OF THE FIRST ARM OF FALSTAFF: <sup>252</sup>Cf AND <sup>235</sup>U FISSION FRAGMENT CHARACTERISATION** ..... 131

*Doré D., Berthoumieux E., Deshayes Q., Thulliez L., Legou P., Combet M., Kebbiri M., Marcel A., Mols J-Ph., Frégeau M.O., Herlant S., Ledoux X., Pancin J., Oberstedt S.*

<b>PROMPT FISSION NEUTRON INVESTIGATION IN <math>^{235}\text{U}(\text{N}_{\text{TH}},\text{F})</math> AND <math>^{252}\text{CF}(\text{SF})</math> REACTIONS</b> .....	137
<i>Zeynalov Shakir, Sedyshev Pavel, Shvetsov Valery, Sidorova Olga</i>	
<b>STATUS OF FISSION FRAGMENT OBSERVABLES MEASURED WITH THE LOHENGRIN SPECTROMETER</b> .....	144
<i>Julien-Laferrière S., Thombansen L., Kessedjian G., Chebboubi A., Serot O., Sage C., Méplan O., Ramdhane M., Litaize O., Bernard D., Nicholson J., Blanc A., Faust H., Mutti P., Köster U., Letourneau A., Materna T., Rapala M.</i>	
<b>PROMPT AND DELAYED NEUTRON EMISSIONS AND FISSION PRODUCT YIELD CALCULATIONS WITH HAUSER-FESHBACH STATISTICAL DECAY THEORY AND SUMMATION CALCULATION METHOD</b> .....	152
<i>Okumura Shin, Kawano Toshihiko, Chiba Satoshi</i>	
<b>CONSTRAINING FISSION YIELDS USING MACHINE LEARNING</b> .....	158
<i>Lovell Amy, Mohan Arvind, Talou Patrick, Chertkov Michael</i>	
<b>DETAILED VALIDATION OF TWO DETERMINISTIC MODELS OF PROMPT EMISSION. SYSTEMATIC BEHAVIOURS OF RESIDUAL QUANTITIES FROM THE SEQUENTIAL EMISSION</b> .....	166
<i>Tudora Anabella</i>	
<b>ADVANCED MODELLING OF <math>^{238}\text{U}(\text{N},\text{F})</math> IN A FAST REACTOR APPLICATION</b> .....	173
<i>Oprea Cristiana, Mihul Alexandru, Oprea Alexandru</i>	
<b>CURRENT STATUS OF THE VERIFICATION AND PROCESSING SYSTEM GALILÉE-1 FOR EVALUATED DATA</b> .....	180
<i>Coste-Delclaux Mireille, Jouanne Cédric, Moreau Frédéric, Mounier Claude, Visonneau Thierry, Malouch Fadhel</i>	
<b>NUCLEAR DATA ANALYSES FOR IMPROVING THE SAFETY OF ADVANCED LEAD-COOLED REACTORS</b> .....	187
<i>Romajaro Pablo, Álvarez-Velarde Francisco, García-Herranz Nuria</i>	
<b>VALIDATION OF THERMAL NEUTRON SCATTERING CROSS SECTIONS FOR HEAVY WATER BASED ON MOLECULAR DYNAMICS SIMULATION</b> .....	194
<i>Hyun Haelee, Kim Do Heon, Lee Young-Ouk</i>	
<b>INFLUENCE OF NUCLEAR DATA PARAMETERS ON INTEGRAL EXPERIMENT ASSIMILATION USING COOK'S DISTANCE</b> .....	201
<i>Kumar D., Alam S. B., Sjöstrand H., Palau J. M., De Saint Jean C.</i>	
<b>COVARIANCE MATRICES FOR DIFFERENTIAL AND ANGLE-INTEGRATED NEUTRON-INDUCED ELASTIC AND INELASTIC SCATTERING CROSS SECTIONS OF <math>^{56}\text{Fe}</math></b> .....	209
<i>Chen Shengli, Bernard David, Archier Pascal, De Saint Jean Cyrille, Noguere Gilles, Tamagno Pierre</i>	
<b>JEFF-3.3 COVARIANCE APPLICATION TO ICSBEP USING SANDY AND NDAST</b> .....	216
<i>Fiorito Luca, Dyrda James, Fleming Michael</i>	
<b>INTEGRAL DATA ASSIMILATION OF THE MERCI-1 EXPERIMENT FOR THE NUCLEAR DATA ASSOCIATED WITH THE PWR DECAY HEAT COMPUTATION</b> .....	225
<i>Huyghe J., De Saint-Jean C., Lecarpentier D., Reynard-Carette C., Vaglio-Gaudard C., Vallet V.</i>	
<b>A FIRST SKETCH: CONSTRUCTION OF MODEL DEFECT PRIORS INSPIRED BY DYNAMIC TIME WARPING</b> .....	232
<i>Schnabel Georg, Sjöstrand Henrik</i>	
<b>FORMULATION OF MODEL DEFECTS SUITABLE FOR THE RESONANCE REGIME</b> .....	240
<i>Raab Benedikt, Srdinko Thomas, Leeb Helmut</i>	
<b>MONTE CARLO INTEGRAL ADJUSTMENT OF NUCLEAR DATA LIBRARIES – EXPERIMENTAL COVARIANCES AND INCONSISTENT DATA</b> .....	247
<i>Sjöstrand Henrik, Schnabel Georg</i>	
<b>EXAMPLES OF MONTE CARLO TECHNIQUES APPLIED FOR NUCLEAR DATA UNCERTAINTY PROPAGATION</b> .....	254
<i>Cabellos Oscar, Fiorito Luca</i>	
<b>Author Index</b>	