

# **Scientific Workshop on Nuclear Fission Dynamics and the Emission of Prompt Neutrons and Gamma Rays 2012**

**Physics Procedia Volume 47**

**Biarritz, France  
28 – 30 November 2012**

**Editor:**

**F. –J. Hambsch**

**ISBN: 978-1-63266-359-7**

**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.**

Copyright© by Elsevier B.V.  
All rights reserved.

Printed by Curran Associates, Inc. (2014)

For permission requests, please contact Elsevier B.V.  
at the address below.

Elsevier B.V.  
Radarweg 29  
Amsterdam 1043 NX  
The Netherlands

Phone: +31 20 485 3911  
Fax: +31 20 485 2457

<http://www.elsevierpublishingsolutions.com/contact.asp>

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

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)



Preface	
F.-J. Hamsch, N. Carjan	1
Brownian Shape Dynamics in Fission	
J. Randrup, P. Möller	3
The Generalized Model for the Description of Prompt Neutrons in the Low-energy Fission	
V.A. Rubchenya	10
On the Scission Point Configuration of Fissioning Nuclei	
F.A. Ivanyuk	17
Angular Distribution of the Scission Neutrons with Respect to the Fission Axis	
M. Rizea, N. Carjan, T. Wada	27
Effects of Fission Fragments on the Angular Distribution of Scission Neutrons	
T. Wada, T. Asano, M. Hirokane, N. Carjan, M. Rizea	33
Prompt Fission Neutrons and Gamma Rays in a Monte Carlo Hauser-Feshbach Formalism	
P. Talou, T. Kawano, I. Stetcu	39
Preliminary Results of a Full Hauser-Feshbach Simulation of the Prompt Neutron and Gamma Emission from Fission Fragments	
D. Regnier, O. Litaize, O. Serot	47
Energy Partition in Fission within a Microscopic Approach	
M. Mirea	53
Resonances Interference Effects on $^{233,235}\text{U}$ Nuclei	
C. Oprea, A. Oprea, A. Mihul	60
$^{234}\text{U}(n,f)$ Model Description of Sub-barrier Fission Cross-section Resonances and Calculation of Prompt Neutron Emission Data	
A. Tudora, F.-J. Hamsch, S. Oberstedt	66
A Multiparameter Nuclear-fission Experiment : Can All be Obtained at Once ?	
J. Matarranz, I. Tsekhanovich, A.G. Smith, J.A. Dare, L. Murray, A.J. Pollitt, T. Soldner, U. Koster, D.C. Biswas	76
Event-by-event Modeling of Prompt Neutrons and Photons from Neutron-induced and Spontaneous Fission with FREYA	
R. Vogt, J. Randrup	82
Even-odd Effect in Fission-fragment Z Yields – A New Kind of Nuclear Clock	
K.-H. Schmidt, B. Jurado	88
Impact of Triaxiality on the Emission and Absorption of Neutrons and Gamma Rays in Heavy Nuclei	
E. Grosse, A.R. Junghans, R. Massarczyk	96
Even-odd Effects of Fragment Yields in Low Energy Fission	
F. Gönnenwein	107
Towards Predictions of Fission Probabilities for Astrophysics Applications	
S. Goriely, S. Hilaire, A.J. Koning, A. Bauswein, H.-T. Janka	115
Isotopic Distributions of Fission Fragments from Transfer-induced Fission	
C. Rodríguez-Tajes, M. Caamaño, O. Delaune, F. Farget, L. Audouin, C.-O. Bacri, J. Benlliure, E. Casarejos, E. Clement, D. Cortina, X. Derkx, A. Dijon, D. Doré, B. Fernández-Domínguez, L. Gaudefroy, C. Golabek, A. Heinz, B. Jurado, A. Lemasson, A. Navin, C. Paradela, D. Ramos, T. Roger, M.D. Salsac, C. Schmitt, K.-H. Schmidt, A. Shrivastava, J. Taieb	125
Corrections of Prompt-neutron Emission in Fission-fragment Experiments	
A. Al-Adili, F.-J. Hamsch, S. Pomp, S. Oberstedt	131
Experimental Setup for Investigation of the Resonance Neutron Induced Fission of $^{239}\text{Pu}$	
I. Ruskov, Yu.N. Kopatch, V.R. Skoy, E. Dermendjiev, F.-J. Hamsch, V.N. Shvetsov, P.V. Sedyshev, Ts. Pantelev, L.B. Pikelner, N. Janeva, S.I. Negovellov, Yu.D. Mareev, Zh.V. Mezentseva, I. Ivanov	137
Experimental Studies of Prompt Fission Neutron Energy Spectra	
A. Sardet, T. Granier, B. Laurent, A. Oberstedt	144
Measurement of the $^{240,242}\text{Pu}$ Neutron-induced Fission Cross Sections	
P. Salvador-Castiñeira, R. Bevilacqua, T. Bryś, F.-J. Hamsch, S. Oberstedt, C. Pretel, M. Vidali	150
New Prompt Fission $\gamma$ -ray Spectral Data and its Implication on Present Evaluated Nuclear Data Files	
A. Oberstedt, T. Belgya, R. Billnert, F.-J. Hamsch, Z. Kis, T. Martinez Perez, S. Oberstedt, L. Szentmiklosi, K. Takács, M. Vidali	156
The SOFIA Experiment	
G. Boutoux, G. Bélier, A. Chatillon, A. Ebran, T. Gorbinet, B. Laurent, J.-F. Martin, E. Pellereau, J. Taieb, L. Audouin, L. Tassan-Got, B. Jurado, H. Álvarez-Pol, Y. Ayyad, J. Benlliure, M. Caamaño, D. Cortina-Gil, B. Fernández-Domínguez, C. Paradela, J.-L. Rodríguez-Sánchez, J. Vargas, E. Casarejos, A. Heinz, A. Kelić-Heil, N. Kurz, C. Nociforo, S. Pietri, A. Prochazka, D. Rossi, K.-H. Schmidt, H. Simon, B. Voss, H. Weick, J.S. Winfield	166

Fusion-fission Study at JAEA for Heavy-element Synthesis	
K. Nishio .....	172
Fission Experiments at <i>n</i> ELBE	
T. Kögler, R. Beyer, R. Hannaske, A.R. Junghans, R. Massarczyk, A. Wagner .....	178