

# **Scientific Workshop on Nuclear Fission and the Emission of Prompt Neutrons and Gamma Rays (Theory-5)**

EPJ Web of Conferences Volume 256 (2021)

Barga, Italy  
24-26 September 2019

**Editors:**

**Nicolae Carjan  
Stephan Oberstedt**

ISBN: 978-1-7138-4179-1

**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. (2022)

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

Isomer Yields in Nuclear Fission .....	1
<i>A. Al-Adili, Z. Gao, M. Lantz, A. Solders, M. Osterlund, S. Pomp</i>	
Angular Distribution of Fragments in Neutron-Induced Nuclear Fission at Energies 1–200 MeV: Data, Theoretical Models and Relevant Problems.....	9
<i>Alexey Barabanov, Alexander Vorobyev, Alexei Gagarski, Oleg Shcherbakov, Larisa Vaishnene</i>	
Multiplicity of Scission Neutrons from Density Functional Scission Dynamics .....	21
<i>Nicolae Carjan, Ionel Stetcu, Margarit Rizea, Aurel Bulgac</i>	
The Study of Prompt Fission $\gamma$ Rays at the Oslo Cyclotron Laboratory.....	28
<i>D. Gjestvang, S. Siem, F. Zeiser, J. Randrup, R. Vogt, F. Bello-Garrote, L.A. Bernstein, D.L. Bleuel, M. Guttormsen, A. Gorgen, A.C. Larsen, K.L. Malatji, E. Matthews, V. Modamio, A. Oberstedt, S. Oberstedt, T. Torny, G. Tveten, A. Voyles, J. Wilson</i>	
Dependence of the ROT Effect on the Energy of Different Light Charged Particles and on the Incident Neutron Energy .....	33
<i>Irina Guseva, Alexei Gagarski, Friedrich Gonnenwein, Yuri Gusev</i>	
The Description of the Excitation Energy Sharing in Nuclear Fission Within the Langevin Approach .....	42
<i>F.A. Ivanyuk, S. Chiba</i>	
The $\nu$ -Ball Campaign at ALTO: Study for Neural Network Based Trigger for Fission Process.....	49
<i>Matthieu Lebois, Nikola Jovancevic, Damien Thisse, Jonathan Wilson, Rhiann Canavan, Mathias Rudigier</i>	
Anisotropy in Fission Fragment and Prompt Neutron Angular Distributions .....	61
<i>A.E. Lovell, P. Talou, I. Stetcu, K.J. Kelly</i>	
Microscopic Description of A-Decay as Super-asymmetric Fission .....	69
<i>Mihail Mirea</i>	
Investigation of Fission Product Isomeric Ratios and Angular Momenta of $^{132}\text{Sn}$ Populated in the $^{241}\text{Pu}(n_{th},f)$ Reaction.....	75
<i>Jehaan Nicholson, Abdelhazize Chebboubi, Olivier Serot, Gregoire Kessedjian, Yung Hee Kim, Ulli Köster, Olivier Litaize, Olivier Meplan, Christophe Sage, Mourad Ramdhane</i>	
Systematic Study of the De-Excitation of Neutron-rich Nuclei Produced in Different Fission Reactions .....	84
<i>Andreas Oberstedt, Angelique Gatera, Alf Gook, Matthieu Lebois, Stephan Oberstedt, Liqiang Qi, Christelle Schmitt, Jonathan N. Wilson</i>	
Energy Sharing Based on Microscopic Level Densities.....	93
<i>Jorgen Randrup, Martin Albertsson, Gillis Carlsson, Thomas Dossing, Peter Moller, Sven Aberg</i>	

TANGRA Multidetector Systems for Investigation of Neutron-Nuclear Reactions at the JINR Frank Laboratory of Neutron Physics.....	102
<i>Ivan Ruskov, Yury Kopach, Vyacheslav Bystritsky, Vadim Skoy, Dimitar Grozdanov, Nikita Fedorov, Tatyana Tretyakova, Fuad Aliev, Constantin Hramco, Vyacheslav Slepnev, Nikolay Zamyatin, Aman Gandhi, Dongming Wang, Ajay Kumar, Evgeni Zubarev, Evgeny Bogolubov, Yuri Barmakov</i>	
Structural Effects in the Production of Neutrons, Gammas and Anti-Neutrinos in Fission .....	112
<i>K.-H. Schmidt, M. Estienne, M. Fallot, B. Jurado, C. Schmitt</i>	
Fission in a Microscopic Framework: from Basic Science to Support for Applications .....	121
<i>Ionel Stetcu, Aurel Bulgac, Shi Jin, Kenneth J. Roche, Nicolas Schunck</i>	
Overview of Two Deterministic Modelings for Prompt Emission in Fission .....	130
<i>Anabella Tudora</i>	
Possible Ternary Fission of Super-Heavy Nuclei.....	140
<i>Takahiro Wada, Kazuki Okada, Nicolae Carjan, Fedir Ivanyuk</i>	
High Resolution Gamma-Ray Spectroscopy of Fast-neutron Induced Fission .....	147
<i>Jonathan Wilson, Damien Thisse, Matthieu Lebois, Nikola Jovancevic, Rhiann Canavan, Mathias Rudigier, David Etasse, Rosa-Belle Gerst</i>	

**Author Index**