

**Dynamics of Nuclear Fission**  
**16-19<sup>th</sup> December 2024**  
**ESNT workshop**  
**CEA Saclay Orme des Merisiers b703 room 135**

Organizers: David Regnier (CEA DAM, contact), Stéphane Hilaire (CEA DAM), Dario Vretenar (Univ of Zagreb)  
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The workshop foresees the meeting between the ab-initio, the phenomenological microscopic and the macroscopic communities of nuclear theory, as well as the participation of experimentalists in the field of light nuclei. Exchanges and discussions on the prediction of structure observables, with particular attention to cluster properties, are expected to take place.

**The goals of the workshop are to:**

1. Review the advances of nuclear fission theory in the last five years.
2. Examine the current stages of development of phenomenological and microscopic models and establish new connections between the two approaches.
3. Compare the computational strategies adopted by various research teams and identify challenges for the new generation of fission computer codes (dependable calculation of deformation energy surfaces, collective inertia, functional optimization, time evolution, symmetry restoration).
4. Discuss with experimental teams the desired levels of accuracy for the description of specific fission observables including uncertainty quantification.
5. Identify new applications of nuclear fission theory, particularly in the field of nuclear astrophysics.
6. Issue a set of specific recommendations for developing a unified framework for the description of spontaneous and induced fission, that will start from nuclear structure and extend to the modeling of fission observables that are relevant for applications.

**Schedule 16-19 December - room 135**

	<b>Monday 16<sup>th</sup> Dec.</b>	<b>Tuesday 17<sup>th</sup> Dec.</b>	<b>Wednesday 18<sup>th</sup></b>	<b>Thursday 19<sup>th</sup></b>
<i>9h30</i>	<b>A. Plompen</b>	<b>P. Morfouace</b>	<b>V. Piau</b>	<b>L. Gaudefroy</b>
<i>10h30</i>	<b>P. Romain</b>	<b>G. Kessedjian</b>	<b>A. Chebboubi</b>	<b>G. Scamps</b>
<i>11h15</i>	<i>Break</i>	<i>Break</i>	<i>Break</i>	<i>Break</i>
<i>11h45</i>	<b>K. Washiyama</b>	<b>D. Vretenar</b>	<b>J.-F. Lemaitre</b>	<b>P. Magierski</b>
<i>12h30</i>	<i>Lunch</i>	<i>Lunch</i>	<i>Lunch</i>	<i>Lunch</i>
<i>13h45</i>	<b>A. Zdeb</b>	<b>W. Ryssens</b>	<b>P. Marevic</b>	<b>A. Sanchez-Fernandez</b>
<i>14h30</i>	<b>M. Verriere</b>	<b>Z. Li</b>	<b>N. Pillet</b>	<b>Discussions</b>
<i>15h15</i>	<i>Break</i>	<i>Break</i>	<i>Break</i>	<b>End</b>
<i>15h45</i>	<b>J. Newsome</b> <i>(end 16h15)</i>	<b>N.-W. T. Lau</b> <i>(end 16h30)</i>	<b>A. Bernard</b> <i>(end 16h15)</i>	
<i>16h30</i>	<i>Discussions</i>	<i>Discussions</i>	<i>Discussions</i>	

## Talks

- A. Bernard (CEA, DAM, DIF) *Generation of Bogoliubov states from machine learning*
- A. Chebboubi (CEA, IRESNE/DER/SPRC/LEPh) *Prediction and emulation of prompt n/g with FIFRELIN*
- L. Gaodefroy (CEA, DAM, DIF) *On the neutronless fission of  $^{252}\text{Cf}(sf)$*
- S. Giuliani (Univ. Autónoma de Madrid) *Theoretical description of yields: Toward a fast and efficient global model*
- G. Kessedjian (CEA, IRESNE/DER/SPRC/LEPh) *Evaluation of fission yields*
- N.-W. T. Lau (CNRS IN2P3 L2IT, Univ. de Toulouse) *Towards an improved description of nuclear fission with the time-dependent generator coordinate method*
- J.F. Lemaître (CEA, DAM, DIF) *Scission point model SPY*
- Z. Li (Southwest University) *Microscopic study on asymmetric fission dynamics of  $^{180}\text{Hg}$  within covariant density functional theory*
- P. Magierski (Warsaw University of Technology) *Recent achievements with the TDSLDA*
- P. Marevic (University of Zagreb)  
*Angular momentum distributions in fission fragments from microscopic theory*
- P. Morfouace (CEA, DAM, DIF) *Overview of recent measurements*
- J. Newsome (CEA, DAM, DIF) *Scalable generation of HFB potential energy landscapes*
- V. Piau (Univ. Paris-Saclay, CNRS IJCLab) *Measurement of the prompt neutrons and gamma rays*
- N. Pillet (CEA, DAM, DIF) *Construction of continuous collective energy landscapes*
- A. Plompen (EC, JRC, Geel) *Neutron-induced fission cross sections: what have we learned from experiment*
- J. Randrup (Lawrence Berkeley Natl Lab) *Correlated fragment angular momenta*
- P. Romain (CEA, DAM, DIF) *Fission cross section evaluation*
- W. Ryssens (ULB, Institut d'Astronomie et d'Astrophysique) *Fission properties of BSkG2*
- G. Scamps (CNRS L2IT-IN2P3, Université de Toulouse) *Collective model for spin generation*
- M. Verriere (Lawrence Livermore National Laboratory) *Fission with TDGCM*
- D. Vretenar (University of Zagreb) *Generalized GCM for fission*
- K. Washiyama (University of Tsukuba) *Collective inertia for spontaneous fission*
- A. Zdeb (Maria Curie–Skłodowska University) *Fission and cluster emission from super-heavy nuclei*