

Probing nuclear structure with β -decay energy spectra, present and near future state II

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Project of the “*Espace de Structure et de réactions Nucléaires Théorique*”

<https://esnt.cea.fr>

21-25 September 2026

CEA Saclay, DPhN, Orme des Merisiers, b. 703, room 135, F-91191 Gif-sur-Yvette

GOALS OF THE WORKSHOP

The first workshop (held from July 6-10, 2025) was successful in starting conversations between theoretical and experimental physicists, as well as between experimentalists studying β -decays from different energy regimes (low energy up to ~ 700 keV versus higher energy up to several MeV).

In summary, the goals of this second workshop are:

1. Continue encouragement for experimental and theoretical β -decay experts to discuss and exchange approaches on different models, limits, and possible improvements thereof.
2. Decide on common actions such as comparing analysis approaches of the same experimental dataset, and comparing theoretical predictions on parts of the nuclear structure models.
3. List priority nuclei and transitions for common studies, focusing on those with possible high impact on related fields. There were some conclusions on this from the first meeting.
4. Ultimately, to agree within the community on a robust procedure to improve nuclear structure models with experimental information from β -decay energy spectra.
5. Continue discussions of β -decay standards.

PROGRAM

MONDAY 21 September 2026

8:45-9h Welcome and introduction (Organizers)

9:00-9:45 O. Naviliat-Cuncic (MSU) *V_{ud} once more*

9:45-10:30 B. Sabot (CEA DRT) *Influence of beta spectrum on new primary activity standards*

10:30-11:00 *Coffee*

11:00-11:45 X. Flécharde (LPC Caen) *Benchmarking of Geant4 for calorimetry measurements*

11:45-12:30 X. Mougeot (CEA DRT) *Beta decay from the nuclear data perspective*

12:30-14h15: *Lunch*

14:15-15h L. Hayen (LPC Caen) *What can recoil spectroscopy teach us in looking for BSM?*

15h-15:45 M. Brodeur (University of Notre Dame) *Beta decay recoil time-of-flight measurements with St. Benedict*

15:45-16:15 *Coffee*

16:15-17:00 *Discussions – Working Group*

TUESDAY 22 September 2026

8:45-9h *Discussions*

9:00-9:45 J. Suhonen (University of Jyväskylä) *The many facets of beta spectral shapes*

9:45-10:30 M. Hellgren (CEA DES) *pnQFAM implementation for allowed beta-decay transitions using a Gogny interaction*

10:30-11:00 *Coffee*

11:00-11:45 M. Rodrigues (CEA DRT) *Beta spectrum of I-129 using metallic microcalorimeters*

11:45-12:30 M. Atzori Corona (INFN) *GAIAS: Precision Measurements of Forbidden Non-Unique Beta Spectra for the Investigation of the Axial-Vector Coupling Constant*

12:30-14h15: *Lunch*

14:15-15h E. Nseir (IJCLab) *The essential Doorway Decay of ^{83}Ga investigated with PARIS*

15:00-15:45 *Discussions – Working Group*

15:45-16:15 *Coffee*

16:15-17:00 *Discussions – Working Group*

WEDNESDAY 23 September 2026

8:45-9h *Discussions*

9:00-9:45 B.C. Rasco (ORNL) *Bremsstrahlung impact on beta decay*

9:45-10:30 P. Navratil (TRIUMF) *Ab initio calculations of beta decays in light nuclei*

10:30-11:00 *Coffee*

11:00 – 11:45 P. Di Stefano (Queen's University) *The KDK Experiment: Investigating 40K*

11:45-12:30 N. Cullen (Queen's University) *The XDK (X-ray decay) experiment: Upgrading KDK for General EC Measurements*

12:30-14h15: *Lunch*

14:15-15h *Discussions – Working Group*

THURSDAY 24 September 2026

8:45-9h *Discussions*

9:00-9:45 C. Doutre (CEA DRF DPhN) *First experimental study of the start point of ^{28}Al Beta-decay with the CRAB facility*

9:45-10:30 M. Stukel (SNOLAB) *RAMPS: Measurement of the highly forbidden decay of Lu-176*

10:30-11:00 *Coffee*

11:00-12:30 K. Han (Shanghai Jiao Tong University) [SEMINAR]

Nuclear physics with liquid xenon detectors & Neutrinoless double beta decay experiments

12:30-14h15: *Lunch*

14:15-15h C. Knapen (KU Leuven) *Experimental set-up for high precision beta spectrum shape measurements at WISArD*

15h – 15:45 A. Lépine (CENBG) *SPELS – Beta shape of ^{32}P at WISArD*

15:45-16:15 *Coffee*

16:15-17:00 *Discussions – Working Group*

FRIDAY 25 September 2026

8:45-9h Discussions

9:00-9:45 S. Leblond (CEA DRT) *Beta spectrometry at LNHB*

9:45-10: G. Craveiro (KU Leuven) *Study of $^{90}\text{Sr}/\text{Y}$ beta spectrum*

10:30-11:00 *Coffee*

11:00 – 11:45 A. Andoche (CEA DRT) *Electronic structure and its effect on beta decay*

11:45-12:30 C. Jeudy (University of Strasbourg) *Influence of the environment on nuclear decays*

12:30-14h15: *Lunch*

14:15-15:00 *Discussions – Working Group Summary*

15h *Closing*

SCHEDULE

	Monday 21 Sept.	Tuesday 22 Sept.	Wednesday 23 Sept.	Thursday 24 Sept.	Friday 25 Sept.
8h45	<i>Welcome</i>	<i>Discussions</i>	<i>Discussions</i>	<i>Discussions</i>	<i>Discussions</i>
9h	O. Naviliat-Cuncic	J. Suhonen	B.C. Rasco	C. Doutre	S. Leblond
9h45	B. Sabot	M. Hellgren	P. Navratil	M. Stukel	G. Craveiro
10h30	<i>Break</i>	<i>Break</i>	<i>Break</i>	<i>Break</i>	<i>Break</i>
11h	X. Fléchart	M. Rodrigues	P. Di Stefano	Seminar K. Han	A. Andoche
11h45	X. Mougéot	M. Atzori Corona	N. Cullen		C. Jeudy
12h30	<i>Lunch</i>	<i>Lunch</i>	<i>Lunch</i>	<i>Lunch</i>	<i>Lunch</i>
14h15	L. Hayen	E. Nseir	DWG	C. Knapen	DWG
15h	M. Brodeur	DWG	<i>End</i>	A. Lépine	Closing
15h45	<i>Break</i>	<i>Break</i>		<i>Break</i>	
16h15	DWG	DWG		DWG	
17h	<i>End</i>	<i>End</i>		<i>End</i>	

EXPERIMENTAL TALKS

THEORY TALKS

BOTH EXP /THEORY

Discussions- Working Group (DWG)