DDEP Status

Decay Data Evaluation Project

X. Mougeot, CEA-LNHB (France)

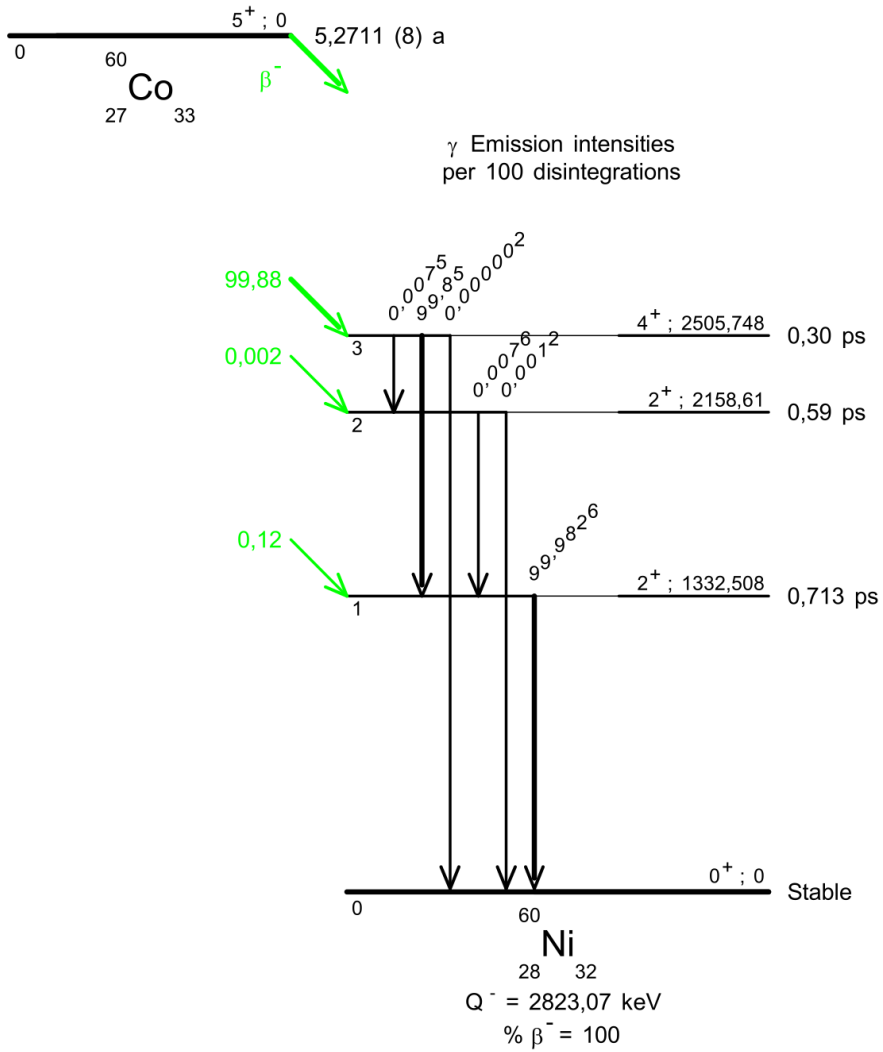
USNDP meeting 2025

DDEP Missions

- **Provide recommended decay data to non-specialists**
  - ✓ Metrology
  - ✓ Fundamental physics (detector calibration)
  - ✓ Nuclear medicine
  - ✓ Nuclear industry

- **Main information of interest**
  - ✓ Half-life, Q-value
  - ✓ Decay scheme
  - ✓ Intensity and energies (transitions, emissions)
    - Alpha / beta / electron capture
    - Gamma and internal conversion
    - X-rays & Auger electrons

Symmetric uncertainties only



DDEP Members

→ **None of the members are full-time-equivalent, far from it.**

- **DDEP Coordination**: Xavier Mougeot

- **LNHB Local team**
  - Xavier Mougeot (evaluation, review, edition, publication)
  - Sylvain Leblond (evaluation, review)
  - Philippe Cassette (evaluation)
  - Giorgia Pasqualato, Marie-Christine Lépy (evaluation, to come)
  - Mark A. Kellett (Special advisor)
  - Christophe Dulieu (IT support, edition, publication)

- **Decay data evaluators**
  - Alan L. Nichols* (Surrey University, UK)
  - Aurelian Luca (IFIN, Romania)
  - Brian E. Zimmerman (NIST, USA)
  - Rob Shearman (NPL, UK)
  - Xialong Huang (CIAE, China)
  - Nikolai Kuzmenko (KRI, Russia)

- **Additional support**
  - Tibor Kibédi* (BrIcc and BrIccMixing codes)

* Retired.

Attempts to increase the workforce

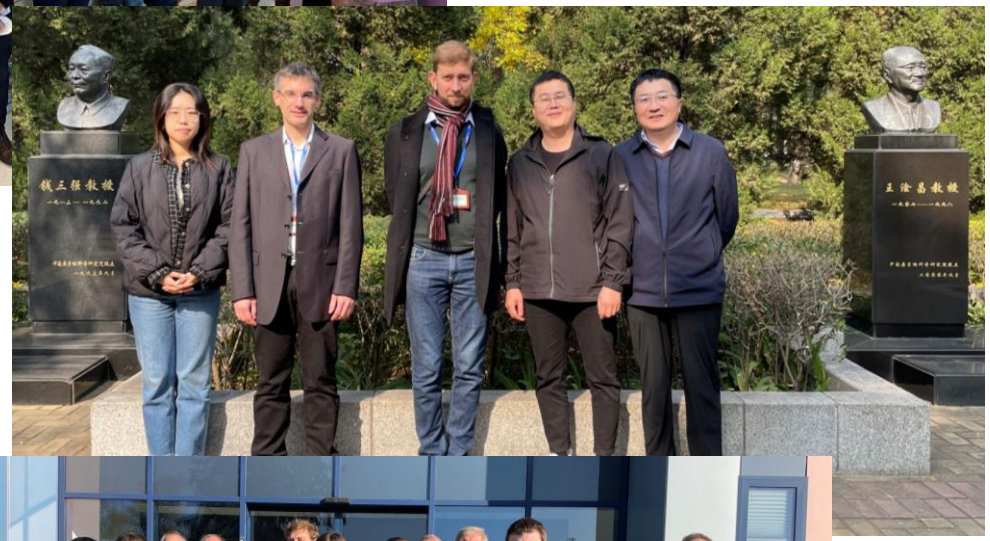
DDEP workforce remains limited. Actions engaged:

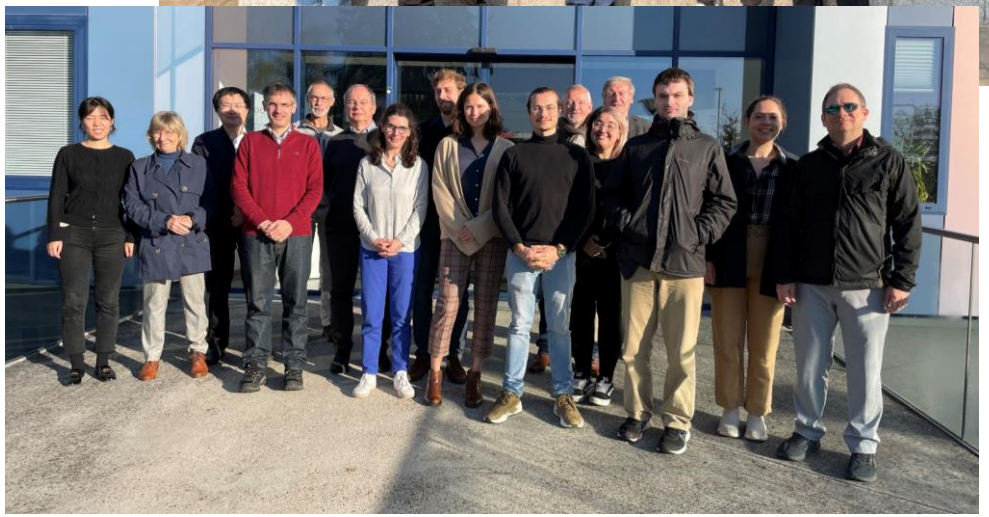
- ✓ 7th to 9th of March 2022: Organisation of a DDEP workshop dedicated to evaluator training.
- ✓ 21st to 28th of October 2023: Visit of China Nuclear Data Centre (Beijing, China).
- 7th to 11th of October 2024: Visit of China Nuclear Data Centre (Beijing, China).
- 21st to 25th of October 2024: Organisation of a DDEP workshop dedicated to evaluator training.

  17 participants from the US, China, UK and Bulgaria + local participants.

- 20th to 24th of October 2025: Visit of China Nuclear Data Centre (Beijing, China).

→ Efforts which require additional work and time, taken on availability dedicated to DDEP.

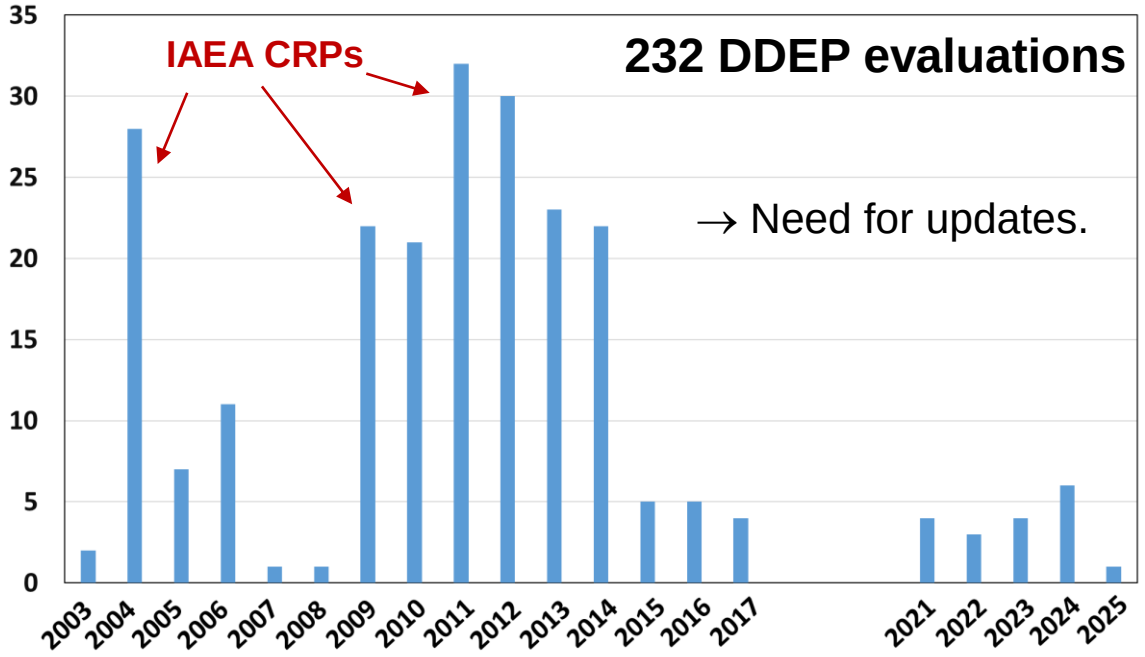




Evaluations

Nuclide		Z	Vol. (?)	UpDate
Ba-137m	^{137m}Ba	56	9	07/09/2023
Sm-151	^{151}Sm	62	9	07/09/2023
He-6	^{6}He	2	9	10/11/2022
Al-26	^{26}Al	13	9	10/11/2022
Rb-87	^{87}Rb	37	9	24/05/2022
Cs-131	^{131}Cs	55	9	21/09/2021
I-124	^{124}I	53	9	20/07/2021
Mn-52	^{52}Mn	25	9	09/02/2021
Mn-52m	^{52m}Mn	25	9	09/02/2021

Nuclide		Z	Vol. (?)	UpDate
Co-55	^{55}Co	27	9	04/09/2024
Rh-103m	^{103m}Rh	45	9	29/08/2024
Pd-103	^{103}Pd	46	9	29/08/2024
Ho-166	^{166}Ho	67	9	24/06/2024
Fe-55	^{55}Fe	26	9	19/03/2024
Sn-129m	^{129m}Sn	50	9	13/03/2024
Ac-225	^{225}Ac	89	9	20/12/2023
Cs-137	^{137}Cs	55	9	07/09/2023
Ti-45	^{45}Ti	22	9	13/02/2025



By end of 2025, ^{40}K*, ^{56}Co, ^{99}Tc, ^{177}Lu, ^{212}Pb*, ^{242}Am are also expected.

* Published in Applied Radiation and Isotopes.

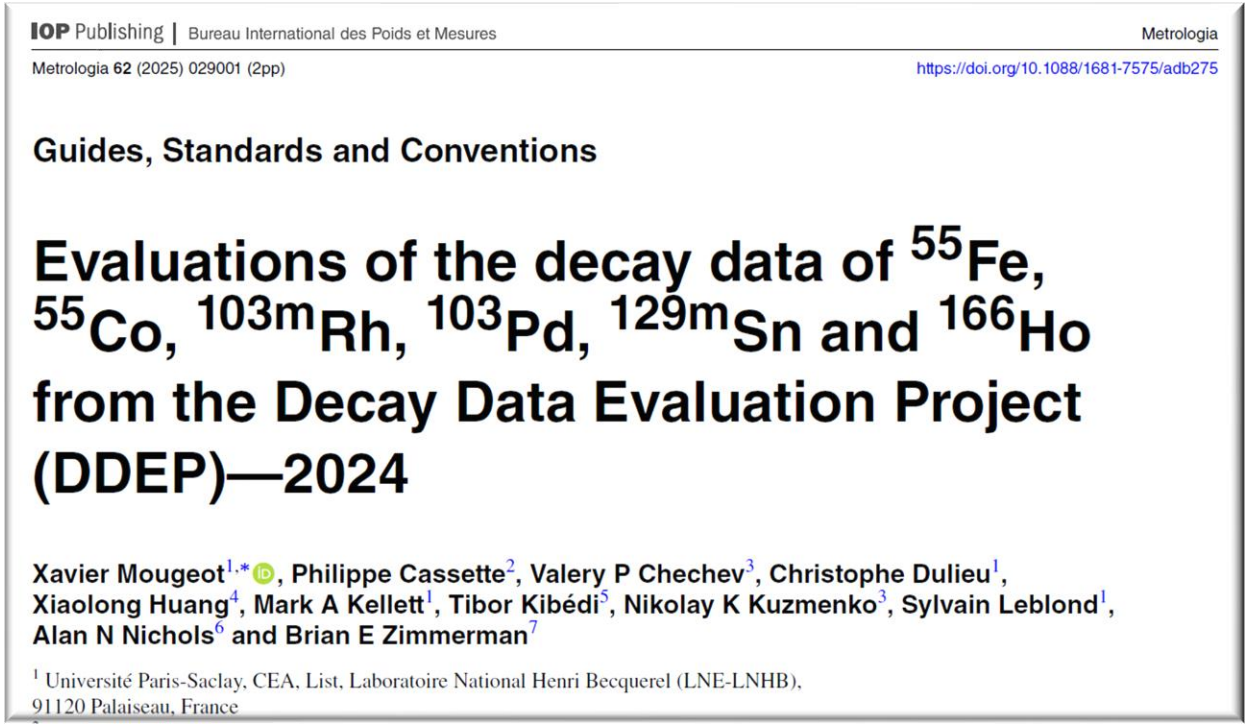
- ✓ Since 2021 (change of coordination), 18 evaluations published.
- ✓ Since latest BIPM vol. 8 monography (2016), 22 evaluations published.

Publication – New approach

- Historically, evaluations compiled in BIPM-5 Monographies (~30 nuclei). Latest was volume 8 in 2016.
- No DOI, difficulties for correct and up-to-date citations. Less recognition for the evaluators.
- ✓ **Yearly publications in Metrologia**, including Tables et Comments.
- ✓ Since volume 8: evaluations from 2021 to 2024 published; 2017 evaluations ongoing.

DOI on the DDEP web site

Vol.	Publication	Année	ISBN
24	Metrologia 62 (2025) 029001	2024	
23	Metrologia 62 (2025) 029002	2023	
22	Metrologia 62 (2025) 039001	2022	
21	Metrologia 62 (2025) 039002	2021	



IOP Publishing | Bureau International des Poids et Mesures — Metrologia

Metrologia 62 (2025) 029001 (2pp) — https://doi.org/10.1088/1681-7575/adb275

Guides, Standards and Conventions

Evaluations of the decay data of ^{55}Fe, ^{55}Co, ^{103m}Rh, ^{103}Pd, ^{129m}Sn and ^{166}Ho from the Decay Data Evaluation Project (DDEP)—2024

Xavier Mougeot[1,*], Philippe Cassette[2], Valery P Chechev[3], Christophe Dulieu[1], Xiaolong Huang[4], Mark A Kellett[1], Tibor Kibédi[5], Nikolay K Kuzmenko[3], Sylvain Leblond[1], Alan N Nichols[6] and Brian E Zimmerman[7]

[1] Université Paris-Saclay, CEA, List, Laboratoire National Henri Becquerel (LNE-LNHB), 91120 Palaiseau, France

New version of the Mini Table

Preliminary model

We have published regularly the Mini Table of Radionuclide since 1983.

- This booklet contains all the most useful parameters for characterizing a radionuclide (half-life and main α, β, γ and atomic emissions). The most widely used or commonly encountered radionuclides in medicine and industry are included.
- Latest version was published in 2015 and has been sold out for a few years.

✓ **A new version is in preparation.**

➢ Initial target was May 2025 for the ICRM 2025 conference we organized, but that was a too naïve objective.

➢ A consolidated version is ready. The 2025 evaluations will be included.

➢ First half of 2026 is now expected.

Thank you for attention