



# UK Nuclear Activity

December 2024 Issue 137

In this issue,

1. [Nuclear Physics Publications for December](#)
2. [News to Report](#)
  - a. [Nuclear Data: An independent-particle motion view published](#)
  - b. [Hadron physics workshop held at University of Glasgow](#)
3. [Outreach Activity](#)
4. [Media Interactions](#)

Newsletter archive: <http://npg.dl.ac.uk/OutreachNewsletter/index.html>

Nuclear Physics Public Engagement Website: [NuclearPhysicsForYou](#)

---

## 1. Nuclear Physics Publications for December\*

If you are publishing a paper that you think would be of media value, please contact [Wendy Ellison](#), STFC Press Officer. She can help with press releases and publicity. If you get in touch with her before publication, she can also get material ready in advance for the day of publication.

\*Also includes missed publications from previous months

Phys. Rev. Lett. **133** 232701 (2024) (<https://doi.org/10.1103/PhysRevLett.133.232701>)

Bound-State Beta Decay of  $^{205}\text{Tl}^{81+}$  Ions and the LOREX Project

R. S. Sidhu *et al.*

Published 2 December 2024

Phys. Rev. Lett. **133** 232502 (2024) (<https://doi.org/10.1103/PhysRevLett.133.232502>)

Candidate Toroidal Electric Dipole Mode in the Spherical Nucleus  $^{58}\text{Ni}$

P. von Neumann-Cosel *et al.*

Published 4 December 2024

Phys. Lett. B **860** 139213 (2024) (<https://doi.org/10.1016/j.physletb.2024.139213>)

New insights on fission of  $^{235}\text{U}$  induced by high energy neutrons from a new measurement at n\_TOF

The n\_TOF Collaboration

Published 20 December 2024

Phys. Lett. B **860** 139066 (2025) (<https://doi.org/10.1016/j.physletb.2024.139066>)

Measurement of  $3\Lambda\text{H}$  production in Pb-Pb collisions at  $\sqrt{s_{\text{NN}}} = 5.02$  TeV

S. Acharya *et al.* (ALICE Collaboration)

Published 17 December 2024

- Phys. Lett. B **860** 139191 (2025) (<https://doi.org/10.1016/j.physletb.2024.139191>)  
Rapidity dependence of antideuteron coalescence in pp collisions at  $\sqrt{s_{NN}} = 13$  TeV with ALICE  
S. Acharya *et al.* (ALICE Collaboration)  
Published 12 December 2024
- Phys. Rev. C **110** 064303 (2024) (<https://doi.org/10.1103/PhysRevC.110.064303>)  
First  $\beta$ -decay spectroscopy of the  $^{139}\text{Te}$  nucleus and its  $Pn$  branching  
R. Lozeva *et al.*  
Published 2 December 2024
- Phys. Rev. C **110** 064311 (2024) (<https://doi.org/10.1103/PhysRevC.110.064311>)  
Low-lying level structure of  $^{140}\text{Pr}$  from the  $(d,\alpha)$  reaction  
D. Bucurescu *et al.*  
Published 9 December 2024
- Phys. Rev. C **110** 064315 (2024) (<https://doi.org/10.1103/PhysRevC.110.064315>)  
Observation of the  $J \leq 7/2$  low-spin states in  $^{213}\text{Fr}$  populated in the electron capture of the  $1/2^-$  ground state of  $^{213}\text{Ra}$   
C. Clisu *et al.*  
Published 16 December 2024
- Phys. Rev. C **110** 064618 (2024) (<https://doi.org/10.1103/PhysRevC.110.064618>)  
First-order perturbative estimate of the  $d+t+\gamma \rightarrow \alpha+n$  reaction rate  
N. K. Timofeyuk  
Published 26 December 2024
- Phys. Rev. C **110** 064619 (2024) (<https://doi.org/10.1103/PhysRevC.110.064619>)  
Measurement of the  $^{176}\text{Yb}(n,\gamma)$  cross section at the n\_TOF facility at CERN  
F. Garcia-Infantes *et al.*  
Published 27 December 2024
- Phys. Rev. C **110** 064901 (2024) (<https://doi.org/10.1103/PhysRevC.110.064901>)  
Measurement of the production and elliptic flow of (anti)nuclei in Xe-Xe collisions at  $\sqrt{s_{NN}}=5.44$  TeV  
S. Acharya *et al.* (ALICE Collaboration)  
Published 2 December 2024
- Phys. Rev. C **110** 064912 (2024) (<https://doi.org/10.1103/PhysRevC.110.064912>)  
Investigating strangeness enhancement in jet and medium via  $\phi(1020)$  production in  $p$ -Pb collisions at  $\sqrt{s_{NN}}=5.02$  TeV  
S. Acharya *et al.* (ALICE Collaboration)  
Published 27 December 2024
- Phys. Rev. C **110** 065805 (2024) (<https://doi.org/10.1103/PhysRevC.110.065805>)  
Measurement of the  $^{78}\text{Se}(n,\gamma)^{79}\text{Se}$  cross section up to 600 keV at the n\_TOF facility at CERN  
N. V. Sosnin *et al.* (n\_TOF Collaboration)  
Published 17 December 2024
- Eur. Phys. J. A **60** 241 (2024) (<https://doi.org/10.1140/epja/s10050-024-01458-5>)  
 $\gamma$ -ray spectroscopy above the  $9^+$  isomeric state in the  $N = Z$  nucleus  $^{66}\text{As}$   
H. Joukainen *et al.*  
Published 5 December 2024

Eur. Phys. J. A **60** 246 (2024) (<https://doi.org/10.1140/epja/s10050-024-01453-w>)

Measurement and analysis of the  $^{246}\text{Cm}$  and  $^{248}\text{Cm}$  neutron capture cross-sections at the EAR2 of the n\_TOF facility at CERN

V. Alcayne *et al.*

Published 10 December 2024

Eur. Phys. J. C **84** 1286 (2024) (<https://doi.org/10.1140/epjc/s10052-024-13394-1>)

Charm fragmentation fractions and cc cross section in p–Pb collisions at  $\sqrt{s_{\text{NN}}}=5.02$  TeV

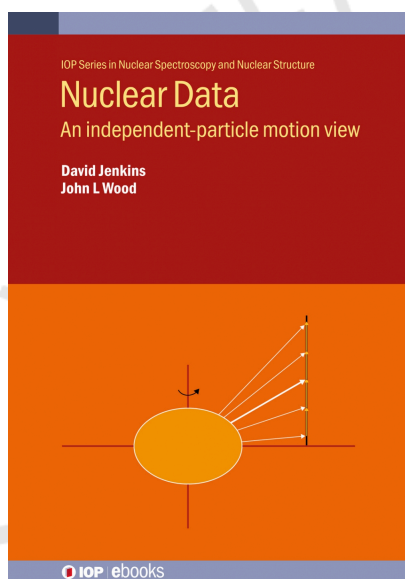
S. Acharya *et al.* (ALICE Collaboration)

Published 13 December 2024

---

## 2. News to Report

### a. Nuclear Data: An independent-particle motion view published

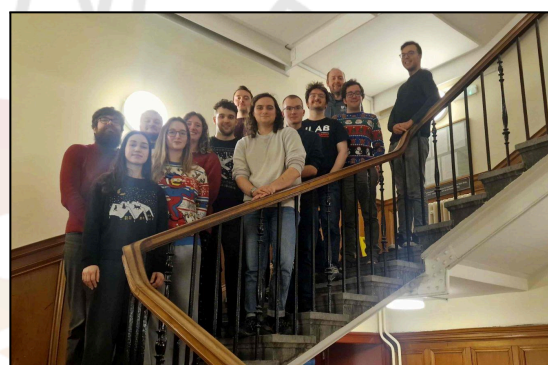


The final member of the trilogy of nuclear structure books authored by David Jenkins and John Wood has recently been published by IOP Publishing. Nuclear Data: An independent-particle motion view ([here](#)) attempts to map out the evidence for independent-particle motion in nuclear structure.

The book is structured into five major chapters each framed around a question such as “Where are the shell model states found in nuclei?”. The approach taken in this book series is to follow the data and see where it takes us, rather than beginning with models. The book encourages students to pose their own research questions and attempt to answer them through the large database of available data.

*Contribution from David Jenkins, University of York*

### b. Hadron physics workshop held at University of Glasgow



Students from the UK Hadron community organised a two-day workshop in December at the University of Glasgow, with funding support for the IOP Nuclear Group. The workshop was organised by students from the Universities of Glasgow and York and featured talks from all PhD students currently studying hadron physics in the UK, covering a wide range of topics such as nuclear form factors, moments of angular momentum, elucidating strangeness and meson spectroscopy.

It was an opportunity for students to foster collaboration, exchange research and ideas, solve problems together (e.g. software issues) and introduce new students to the wider UK hadron community at an early stage in their PhD studies. There were also talks from some of the students in the wider Nuclear Physics group at the University of Glasgow, covering topics such as machine learning in muography, exotic nuclei and nuclear security detectors.

*Contribution from Ryan Ferguson, University of Glasgow*

---

### 3. Outreach Activity

-

---

### 4. Media Interactions

-

