UK Nuclear Activity

June 2025 Issue 143

In this issue,

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

Nuclear Physics Public Engagement Website: NuclearPhysicsForYou

---

1. Nuclear Physics Publications for June*

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. **134** 232701 (2025) (https://doi.org/10.1103/ctyj-ls15)
Precision Mass Measurements Reveal Low Neutron Pairing in Tin beyond N=82 and Its Impact on Stellar Nucleosynthesis
A. Mollaebrahimi *et al.*
Published 10 June 2025

Phys. Rev. Lett. **134** 232502 (2025) (https://doi.org/10.1103/wq9m-trj8)
Seniority Structure in Neutron-Rich Nucleus ^{128}Ag: Evidence for Robustness of N=82 Shell Closure in Silver Isotopes
D. W. Luo *et al.*
Published 12 June 2025

Phys. Rev. Lett. **134** 252501 (2025) (https://doi.org/10.1103/m35x-mw7z)
Reduction in Nuclear Size and Quadrupole Deformation of High-Spin Isomers of ^{127,129}In
A. R. Vernon *et al.*
Published 26 June 2025

Edited by Jack Henderson, IOP Nuclear Physics Group Committee
jack.henderson@surrey.ac.uk

Phys. Lett. B **868** 139645 (2025) (https://doi.org/10.1016/j.physletb.2025.139645)
Direct-photon production in inelastic and high-multiplicity proton–proton collisions at $\sqrt{s}$=13 TeV
ALICE Collaboration
Published 18 June 2025

Phys. Rev. C **111** 064325 (2025) (https://doi.org/10.1103/PhysRevC.111.064325)
Variations in the charge radii of indium isotopes between N=52 and 82
A. R. Vernon *et al.*
Published 26 June 2025

Phys. Rev. C **111** 064611 (2025) (https://doi.org/10.1103/h1yt-5myk)
Improved S factor of the ^{13}C$(p,\gamma)^{14}$N reaction at E_p=330−740keV and parameters of resonances at 448 keV and 551 keV
J. Skowronski *et al.*
Published 11 June 2025

Phys. Rev. C **111** 064310 (2025) (https://doi.org/10.1103/PhysRevC.111.064310)
Structure of ^{128}Sn selectively populated in the β decay of the ^{128}In ground state
M. Llanos-Expósito *et al.*
Published 10 June 2025

Phys. Rev. C **111** 064316 (2025) (https://doi.org/10.1103/mysq-byyv)
Excited-state lifetimes in ^{131}In, ^{131}Sn, and ^{136}Te measured with the HiCARI γ-ray spectrometer at RIBF at RIKEN
J. Acosta *et al.*
Published 16 June 2025

Phys. Rev. C **111** 064321 (2025) (https://doi.org/10.1103/44k6-w3dt)
Variance minimization for nuclear structure on a quantum computer
I. Hobday, P. D. Stevenson, J. Benstead
Published 23 June 2025

Phys. Rev. C **111** 064619 (2025) (https://doi.org/10.1103/w465-w3zz)
Deuteron evaporation from compound nuclei
Y. Hrabar *et al.*
Published 20 June 2025

Phys. Rev. C **111** 064908 (2025) (https://doi.org/10.1103/7lx4-x8rw)
Charged-hadron and identified-hadron (K^0_S, Λ, Ξ^-) yield measurements in photonuclear Pb+Pb and p+Pb collisions at $\sqrt{s_{NN}}$=5.02TeV with ATLAS
G. Aad *et al.* (ATLAS Collaboration)
Published 17 June 2025

Phys. Rev. C **111** 064911 (2025) (https://doi.org/10.1103/yyr5-zp16)
Hard-photon-triggered jets in p–p and A–A collisions
C. Sirimanna *et al.* (JETSCAPE Collaboration)
Published 17 June 2025

Phys. Rev. C **111** 064913 (2025) (https://doi.org/10.1103/zx6t-29hf)
Higher-order symmetry plane correlations in Pb-Pb collisions at $\sqrt{s_{NN}}$=5.02TeV
S. Acharya *et al.* (ALICE Collaboration)
Published 30 June 2025

Edited by Jack Henderson, IOP Nuclear Physics Group Committee
jack.henderson@surrey.ac.uk

Phys. Rev. C **111** 065803 (2025) (https://doi.org/10.1103/PhysRevC.111.065803)
New upper limits for β-delayed fission probabilities of ^{230,232}Fr and ^{230,232,234}Ac
S. Bara *et al.*
Published 2 June 2025

Phys. Rev. C **111** 065804 (2025) (https://doi.org/10.1103/PhysRevC.111.065804)
Refining the deep sub-barrier ^{12}C+^{12}C fusion excitation function with the STELLA apparatus
J. Nippert *et al.* (STELLA Collaboration)
Published 6 June 2025

Phys. Rev. D **111** 112005 (2025) (https://doi.org/10.1103/PhysRevD.111.112005)
First measurement of $D_{s1}(1^+)(2536)^+$ and $D^*_{s2}(2^+)(2573)^+$ production in proton-proton collisions at $\sqrt{s}$=13 TeV at the LHC
S. Acharya *et al.* (ALICE Collaboration)
Published 16 June 2025

Eur. Phys. Journal A **61** 130 (2025) (https://doi.org/10.1140/epja/s10050-025-01597-3)
Half-life determination of heavy ions in a storage ring considering feeding and depleting background processes
R. J. Chen *et al.*
Published 3 June 2025

J. Phys. G **52** 063001 (2025) (https://doi.org/10.1088/1361-6471/addc86)
Nucleosynthesis with tritium
A. Aprahamian *et al.*
Published 27 June 2025

J. Inst. **20** P06047 (2025) (https://doi.org/10.1088/1748-0221/20/06/P06047)
A setup to study atomic state population dynamics and optical polarization at CRYRING@ESR
K. Mohr *et al.*
Published 26 June 2025

Math. Prob. Comp. Sci. **63** 60 (2025) (https://doi.org/10.51408/1963-0132)
A Quantum Diophantine Equation Solution Finder
Lara Tatli and Paul Stevenson
Published 1 June 2025

Physica Scripta **100** 065308 (2025) (https://doi.org/10.1088/1402-4896/add812)
Electron-gamma decay spectroscopy of ^{152}Tb
E. B. O'Sullivan *et al.*
Published 26 May 2025

Metrologia **62** 039002 (2025) (https://doi.org/10.1088/1681-7575/adcb2a)
Evaluations of the decay data of ^{52}Mn, ^{52m}Mn, ^{124}I and ^{131}Cs from the Decay Data Evaluation Project (DDEP)—2021
X. Mougeot *et al.*
Published 22 April 2025

App. Rad. Isotopes **220** 111764 (2025) (https://doi.org/10.1016/j.apradiso.2025.111764)
Gamma spectroscopy measurements of fresh charcoal samples from the Hartlepool advanced gas-cooled reactor
M. A. Goodwin *et al.*
Published 25 March 2025

Edited by Jack Henderson, IOP Nuclear Physics Group Committee
jack.henderson@surrey.ac.uk

Phys. Rev. Applied **22** 044060 (2025) (https://doi.org/10.1103/PhysRevApplied.22.044060)
Measurements of radioxenon activities during periods of gaseous release from an advanced gas-cooled reactor
A. Petts *et al.*
Published 24 October 2024

---

2. News to Report

a. University of York: Frugal Innovation for Societally Important challenges in Africa (FISICA)

In the last week of June, physicists from Ghana, Rwanda, Tanzania, and South Africa came together for the first 'FISICA' workshop at the University of York. Led by Prof David Jenkins, the week was spent exploring innovation opportunities and developing plans for new initiatives in nuclear physics education, agriculture, and healthcare.

On Monday, the team introduced themselves, their institutions and facilities, and preliminary ideas for projects. On Tuesday and Wednesday, the team toured many departments at the University of York and visited Fera Science Ltd to connect with as much complementary expertise as possible. On Thursday, project ideas were refined and the team received training in physical prototyping and its value for frugal innovation. On Friday, the week's work was consolidated into themes and plans for the next few months before the next workshop in Pretoria.

It was an invigorating, challenging, and productive week, and we are excited to see what can be achieved through FISICA. The workshop was supported by Chris Thompson (Innovation Consultant, Viadynamics), Jude Pullen (Technology and Design Consultant), and Dr Adam Featherstone (Knowledge Exchange & Commercialisation Fellow, University of York).

The FISICA team gratefully acknowledges funding from the STFC Africa-UK Physics Partnership programme and sponsorship by Hilger Crystals.

Contribution from Adam Featherstone, University of York

b. BRIDGCE summer school held at the University of York

The first BRIDGCE Explosive Nucleosynthesis Summer School took place at the University of York from the 2nd to the 3rd of June 2025. The school introduced astrophysical transients and our current understanding of their nucleosynthesis through modelling, observations, and experimentation. Invited lecturers from within the BRIDGCE network and its collaborators presented engaging talks and provided hands-on experience using software relevant to experimental nuclear astrophysics, nuclear post processing codes and radiative transfer models.

The school prioritised creating space for discussion, and there was an “Inclusion in Physics” session on the second day which asked attendees to consider how they make their research spaces inclusive to others. 16 early career-researchers attended and the

organising committee wishes to thank the IOP Nuclear Physics Group, EMMI at GSI, the RAS and IReNA for their support of the summer school.

Contribution from Sophie Abrahams, University of York

c. BRIDGCE meeting held at the University of York

The BRIDGCE annual meeting took place at the University of York from the 4th to the 6th of June 2025. Over 40 people attended the conference in person, with another 10 attendees joining online, for a programme which included seven invited talks and 26 contributed talks. Attendees presented work ranging from experimental nuclear astrophysics to observational astronomy, and there was significant contribution from early-career researchers who made up over 80% of speakers.

The conference also included a careers event, with flash talks from academics at different career stages as well as speakers from industry followed by an open Q&A for attendees to ask more about the panelists' experiences. The BRIDGCE annual meeting would not have been possible without the IOP Nuclear Physics Group, the STFC, EMMI at GSI and IReNA - the local organising committee wishes to thank these organisations for their support.

We would also like to thank all those who attended and contributed for making the BRIDGCE 2025 annual meeting such a success, and look forward to seeing everyone in Hertfordshire for the 2026 meeting!

Contribution from Sophie Abrahams, University of York

---

3. Outreach Activity

a. Why isn't an atom's nucleus round?

David Jenkins (York) and Paul Stevenson (Surrey) were interviewed for an article on the Live Science outreach website. The article sought to answer the question "Why Isn't an Atom's Nucleus Round?":

https://www.livescience.com/physics-mathematics/why-isnt-an-atoms-nucleus-round

Contribution from Paul Stevenson, University of Surrey

---

4. Media Interactions

a. Decoding r-Process Nucleosynthesis: Precision Studies of Exotic Indium Isotopes at ISOLDE

A recent study on 134,135In performed at the ISOLDE decay station (IDS) was reported on in the CERN EP newsletter.

Contribution from James Cubiss, University of Edinburgh