UK Nuclear Activity

Aug. and Sept. 2022 Issue 110

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

Nuclear Physics Public Engagement Website: NuclearPhysicsForYou

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1. Nuclear Physics Publications for August and September*

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.

Nature Comm. Phys. **5,** 213 (2022) (https://doi.org/10.1038/s42005-022-00990-4)
Reassigning the shapes of the 0^+ states in the ^{186}Pb nucleus
J. Ojala et al.
Published 18 August 2022

Phys. Rev. Lett. **129**, 102701 (2022) (https://doi.org/10.1103/PhysRevLett.129.102701)
Extending the Hoyle-State Paradigm to ^{12}C+^{12}C Fusion
P. Adsley et al.
Published 2 September 2022

Phys. Rev. Lett. **129**, 112501 (2022) (https://doi.org/10.1103/PhysRevLett.129.112501)
Evidence of Partial Seniority Conservation in the $\pi g_{9/2}$ Shell for the N=50 Isotones
R. M. Pérez-Vidal et al.
Published 7 September 2022

Phys. Rev. Lett. **129**, 132701 (2022) (https://doi.org/10.1103/PhysRevLett.129.132701)
Deep Underground Laboratory Measurement of ^{13}C(α,n)^{16}O in the Gamow Windows of the s and i Processes
B. Gao et al. (JUNA Collaboration)
Published 23 September 2022

Phys. Lett. B **832** 137256 (2022) (https://doi.org/10.1016/j.physletb.2022.137256)
Hints of quasi-molecular states in ^{13}B via the study of ^{9}Li-^{4}He elastic scattering
A. Di Pietro et al.
Published 10 September 2022

Ann. Rev. Nucl. Part. Science **72** 177 (2022) (https://doi.org/10.1146/annurev-nucl-110221-103625)
Exploring Stars in Underground Laboratories: Challenges and Solutions
M. Aliotta, A. Boeltzig, R. Depalo and G. Gyurky
Published September 2022

Phys. Rev. C **106**, 024305 (2022) (https://doi.org/10.1103/PhysRevC.106.024305)
Fine structure in the α decay of the 8^{+} isomer in $^{216,218}U$
M. M. Zhang et al.
Published 4 August 2022

Phys. Rev. C **106**, 024312 (2022) (https://doi.org/10.1103/PhysRevC.106.024312)
Investigating nuclear structure near N=32 and N=34: Precision mass measurements of neutron-rich Ca, Ti, and V isotopes
W. S. Porter et al.
Published 10 August 2022

Phys. Rev. C **106**, 024314 (2022) (https://doi.org/10.1103/PhysRevC.106.024314)
Lifetime measurements of states of ^{35}S, ^{36}S, ^{37}S, and ^{38}S using the AGATA γ-ray tracking spectrometer
L. Grocutt et al.
Published 16 August 2022

Phys. Rev. C **106**, 024317 (2022) (https://doi.org/10.1103/PhysRevC.106.024317)
Identification of excited states in ^{188}Bi and ^{188}Po
W. Q. Zhang et al.
Published 17 August 2022

Phys. Rev. C **106**, 024327 (2022) (https://doi.org/10.1103/PhysRevC.106.024327)
Spectroscopy of the T=3/2 A=47 and A=45 mirror nuclei via one- and two-nucleon knockout reactions
S. Uthayakumaar et al.
Published 25 August 2022

Phys. Rev. C **106**, 034304 (2022) (https://doi.org/10.1103/PhysRevC.106.034304)
Evidence for spherical-oblate shape coexistence in ^{87}Tc
X. Liu et al.
Published 9 September 2022

Phys. Rev. C **106**, 034311 (2022) (https://doi.org/10.1103/PhysRevC.106.034311)
Structure of $^{126,128}Xe$ studied in Coulomb excitation measurements
S. Kisyov et al.
Published 19 September 2022

Phys. Rev. C **106**, 034907 (2022) (https://doi.org/10.1103/PhysRevC.106.034907)
Production of $K^{*}(892)^{0}$ and $\phi(1020)$ in pp and Pb−Pb collisions at $\sqrt{s_{NN}}$=5.02 TeV
S. Acharya et al. (ALICE Collaboration)
Published 14 September 2022

Rad. Phys. Chem. **200** 110095 (2022) (https://doi.org/10.1016/j.radphyschem.2022.110095)
Isomers as a bridge between nuclear and atomic physics
P. M. Walker

Chapter in "Handbook of Nuclear Physics", (Springer Nature Singapore 2022) pp.1-37 (https://doi.org/10.1007/978-981-15-8818-1_46-1)
Nuclear isomers
P.M. Walker and Zs. Podolyak

Frontiers in Physics **10**, 942726 (2022) (https://doi.org/10.3389/fphy.2022.942726)
Screening Effects in Stars and in the Laboratory
M. Aliotta and K. Langanke
Published 06 July 2022

J. Phys. G. **49** 101501 (2022) (https://doi.org/10.1088/1361-6471/ac2b0f)
The status and future of direct nuclear reaction measurements for stellar burning
M. Aliotta et al.
Published 25 November 2021

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2. News to Report

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3. Outreach Activity

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4. Media Interactions

a. Dr. David Mahon discusses cosmic ray muon tomography in the Financial Times

Dr. David Mahon, a lecturer at the University of Glasgow, was recently interviewed for an article in the Financial Times on cosmic ray muon tomography. Dr. Mahon discussed applications of the technique and potential future directions.

The article can be found here (requires subscription): https://www.ft.com/content/c64f90fa-b239-45b2-8414-a4658adeb106

Contribution by Dr. David Mahon, University of Glasgow

b. Dr. Paul Stevenson discusses quantum computing on Physics World Weekly podcast

On the 15th of September edition of the Physics World Weekly podcast, Dr. Paul Stevenson discussed challenges and opportunities presented by quantum computers. In particular he focussed on the roles they might play solving problems in nuclear physics.

The podcast episode can be found here: https://physicsworld.com/a/quantum-computers-could-soon-bring-breakthroughs-in-nuclear-physics/

Contribution by Dr. Paul Stevenson, University of Surrey