UK Nuclear Activity

March 2022 Issue 105

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

Nuclear Physics Public Engagement Website: NuclearPhysicsForYou

Nuclear Physics Outreach Poster – order hardcopies from STFC free of charge here

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1. Nuclear Physics Publications for March*

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. **128** 112501 (2022) (https://doi.org/10.1103/PhysRevLett.128.112501)
Nanosecond-Scale Proton Emission from Strongly Oblate-Deformed ^{149}Lu
K. Auranen, A. D. Briscoe, L. S. Ferreira, T. Grahn, P. T. Greenlees, A. Herzáň, A. Illana, D. T. Joss, H. Joukainen, R. Julin, H. Jutila, M. Leino, J. Louko, M. Luoma, E. Maglione, J. Ojala, R. D. Page, J. Pakarinen, P. Rahkila, J. Romero, P. Ruotsalainen, M. Sandzelius, J. Saren, A. Tolosa-Delgado, J. Uusitalo, and G. Zimba
Published 16 March 2022
See also: *Nature* **604**, 10 (2022) (https://doi.org/10.1038/d41586-022-00889-8)

Phys. Rev. C **105**, L031304 (2022) (https://doi.org/10.1103/PhysRevC.105.L031304)
Nature of seniority symmetry breaking in the semimagic nucleus ^{94}Ru
B. Das *et al.*
Published 25 March 2022

Phys. Rev. C **105**, 034301 (2022) (https://doi.org/10.1103/PhysRevC.105.034301)
Border of the island of inversion: Unbound states in ^{29}Ne
M. Holl *et al.* (SAMURAI21 Collaboration)
Published 1 March 2022

Phys. Rev. C **105**, L032201 (2022) (https://doi.org/10.1103/PhysRevC.105.L032201)
J/ψ photoproduction in Pb-Pb peripheral collisions at √sNN=5 TeV
R. Aaij *et al.* (LHCb Collaboration)
Published 3 March 2022

Phys. Rev. C **105**, 035201 (2022) (https://doi.org/10.1103/PhysRevC.105.035201)
Measurement of spin density matrix elements in Λ(1520) photoproduction at 8.2–8.8 GeV
S. Adhikari *et al.* (GlueX Collaboration)
Published 3 March 2022

Phys. Rev. C **105**, 034302 (2022) (https://doi.org/10.1103/PhysRevC.105.034302)
Experimental evidence for transverse wobbling bands in ^{136}Nd
B. F. Lv *et al.*
Published 2 March 2022

Phys. Rev. C **105**, 034303 (2022) (https://doi.org/10.1103/PhysRevC.105.034303)
Single-particle states and parity doublets in odd-Z ^{221}Ac and ^{225}Pa from α-decay spectroscopy
E. Parr *et al.*
Published 2 March 2022

Phys. Rev. C **105**, 034314 (2022) (https://doi.org/10.1103/PhysRevC.105.034314)
Mirror nucleon removal reactions in p-shell nuclei
A. N. Kuchera *et al.*
Published 11 March 2022

Phys. Rev. C **105**, 034316 (2022) (https://doi.org/10.1103/PhysRevC.105.034316)
β- and γ-spectroscopy study of ^{119}Pd and ^{119}Ag
J. Kurpeta, A. Abramuk, T. Rząca-Urban, W. Urban, L. Canete, T. Eronen, S. Geldhof, M. Gierlik, J. P. Greene, A. Jokinen, A. Kankainen, I. D. Moore, D. A. Nesterenko, H. Penttilä, I. Pohjalainen, M. Reponen, S. Rinta-Antila, A. de Roubin, G. S. Simpson, A. G. Smith, and M. Vilén
Published 14 March 2022

Phys. Rev. C **105**, 034318 (2022) (https://doi.org/10.1103/PhysRevC.105.034318)
In-beam γ-ray spectroscopy of ^{32}Mg via direct reactions
N. Kitamura *et al.*
Published 16 March 2022

Phys. Rev. C **105**, 034331 (2022) (https://doi.org/10.1103/PhysRevC.105.034331)
Ground-state β-decay spectroscopy of ^{187}Ta
M. Mukai, Y. Hirayama, Y. X. Watanabe, H. Watanabe, H. Koura, S. C. Jeong, H. Miyatake, M. Brunet, S. Ishizawa, F. G. Kondev, G. J. Lane, Yu. A. Litvinov, T. Niwase, M. Oyaizu, Zs. Podolyák, M. Rosenbusch, P. Schury, M. Wada, and P. M. Walker
Published 25 March 2022

Phys. Rev. C **105**, 034332 (2022) (https://doi.org/10.1103/PhysRevC.105.034332)
Coulomb excitation of the |Tz|=1/2, A=23 mirror pair
J. Henderson *et al.*
Published 28 March 2022

Phys. Rev. C **105**, 034333 (2022) (https://doi.org/10.1103/PhysRevC.105.034333)
Systematics of E2 strength in the sd shell with the valence-space in-medium similarity renormalization group
S. R. Stroberg, J. Henderson, G. Hackman, P. Ruotsalainen, G. Hagen, and J. D. Holt
Published 28 March 2022

Phys. Rev. C **105**, 034334 (2022) (https://doi.org/10.1103/PhysRevC.105.034334)
First observation of the $\pi 0h_{11/2} \otimes \nu 0h_{9/2}$ partner orbital configuration in the odd-odd ^{138}I nucleus
B. Moon *et al.*
Published 28 March 2022

Phys. Rev. C **105**, 034338 (2022) (https://doi.org/10.1103/PhysRevC.105.034338)
Decay modes of the $9/2^-$ isomeric state in ^{183}Tl
M. Venhart *et al.*
Published 28 March 2022

Phys. Lett. B **827** 136930 (2022) (https://doi.org/10.1016/j.physletb.2022.136930)
Precision measurement of the magnetic octupole moment in ^{45}Sc as a test for state-of-the-art atomic- and nuclear-structure theory
R. P. de Groote *et al.*
Published 10 April 2022

Phys. Lett. B **827** 136928 (2022) (https://doi.org/10.1016/j.physletb.2022.136928)
Investigating the predicted breathing-mode excitation of the Hoyle state
K. C. W. Li *et al.*
Published 10 April 2022

Phys. Lett. B **827** 136953 (2022) (https://doi.org/10.1016/j.physletb.2022.136953)
A first glimpse at the shell structure beyond ^{54}Ca: Spectroscopy of ^{55}K, ^{55}Ca, and ^{57}Ca
T. Koiwai *et al.*
Published 10 April 2022

Phys. Lett. B **827** 136957 (2022) (https://doi.org/10.1016/j.physletb.2022.136957)
Unveiling the two-proton halo character of ^{17}Ne: Exclusive measurement of quasi-free proton-knockout reactions
C. Lehr *et al.*
Published 10 April 2022

J. Phys. G **49** 010501 (2022)
The status and future of direct nuclear reaction measurements for stellar burning
M. Aliotta, R. Buompane, M. Couder, A. Couture, R. J. deBoer, A. Formicola, L. Gialanella, J. Glorius, G. Imbriani, M. Junker, C. Langer, A. Lennarz, Yu A. Litvinov, W-P. Liu, M. Lugaro, C. Matei, Z. Meisel, L. Piersanti, R. Reifarth, D. Robertson, A. Simon, O. Straniero, A. Tumino, M. Wiescher and Y. Xu
Published January 2022

European Physical Journal A **58** 50 (2022) (https://doi.org/10.1140/epja/s10050-022-00704-y)
Candidate revolving chiral doublet bands in ^{119}Cs
K. K. Zheng, C. M. Petrache, Z. H. Zhang, A. Astier , B. F. Lv, P. T. Greenlees, T. Grahn, R. Julin, S. Juutinen, M. Luoma, J. Ojala, J. Pakarinen, J. Partanen, P. Rahkila, P. Ruotsalainen, M. Sandzelius, J. Sarén, H. Tann, J. Uusitalo, G. Zimba, B. Cederwall, Ö. Aktas, A. Ertoprak, W. Zhang, S. Guo, M. L. Liu, X. H. Zhou, I. Kuti, B. M. Nyakó, D. Sohler, J. Timár, C. Andreoiu, M. Doncel, D. T. Joss and R. D. Page
Published 20 March 2022

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2. News to Report

a. Prof. Marialuisa Aliotta elected Fellow of the Royal Society of Edinburgh

Professor Marialuisa Aliotta has been elected as a Fellow of the Royal Society of Edinburgh. A professor of Experimental Nuclear Astrophysics, her research interests focus on the investigation of nuclear reactions that occur in stars and govern stellar lifetimes and evolution. These reactions are also responsible for the creation of new chemical elements both in quiescent stars such as our sun and in explosive scenarios such as novae, supernovae, and X-ray bursts.

"*I'm delighted to be joining the Fellowship of the Royal Society of Edinburgh. I look forward to working with the society in support of its endeavours to help inspire future generations.*"

More details can be found at:
https://www.ph.ed.ac.uk/news/2022/congratulations-to-the-new-royal-society-of-edinburgh-fellows-22-03-22

https://rse.org.uk/academic-and-artistic-minds-honoured-as-rse-fellows/

Contribution by Marialuisa Aliotta
University of Edinburgh

b. Interact 2022 – An Engagement Symposium for the Physical Sciences - Registration open and free

STFC and partners are organising the Interact 2022 symposium on Wednesday 14th September 2022 at Cardiff City Hall in partnership with Cardiff University, with an evening reception on 13th September. This

event, which spans the physical sciences, offers something for everyone with an interest in improving their public engagement capabilities. It will provide a fantastic opportunity to learn new ways to engage with your audience, a chance to share your experiences and good practice, explore funding routes for engagement and discuss how the engagement landscape has changed, especially considering the pandemic.
If you wish to run a workshop or a session then you need to register by the end of April. Participant registration open until the 5th of September.

The event is free and open to all. Financial support is available for early career researchers.
Tickets for the event can be found here: https://www.eventbrite.co.uk/e/interact-2022-tickets-303705540447

Contribution by Philippos Papadakis
STFC Daresbury Laboratory

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3. Outreach Activity

a. "Issues surrounding nuclear generation"

A talk, "Issues surrounding nuclear generation" was presented at a meeting of Stretton Climate Care on the topic "Keeping the Lights on" – attended by 38 people in Church Stretton, Shropshire.

Contribution by Philip Walker, University of Surrey

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4. Media Interactions

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