UK Nuclear Activity

July 2021 Issue 97

In this issue,

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

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1. Nuclear Physics Publications for July (also includes missed publications from previous months)

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.

Phys. Rev. C 104, 014301
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.104.014301
Ground state inversions in hole nuclei near ^{132}Sn driven by the monopole interaction
H. K. Wang1,2,3,*, Z. Q. Chen4,5, H. Jin6, Z. H. Li4, G. S. Li7, Y. M. Feng1, and Q. Wang8
Published 1 July 2021

Phys. Rev. C 104, 014302
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.104.014302
Probing the single-particle behavior above ^{132}Sn via electromagnetic moments of ^{133,134}Sb and N=82 isotones
S. Lechner1,2,*, Z. Y. Xu3,4, M. L. Bissell5, K. Blaum6, B. Cheal7, G. De Gregorio8,9, C. S. Devlin7, R. F. Garcia Ruiz1,†, A. Gargano8, H. Heylen1, P. Imgram10, A. Kanellakopoulos3,‡, Á. Koszorús3,§, S. Malbrunot-Ettenauer1, R. Neugart6,11, G. Neyens1,3, W. Nörtershäuser10, P. Plattner1,12, L. V. Rodríguez6,13,‖, X. F. Yang14, and D. T. Yordanov13
Published 2 July 2021

Phys. Rev. C 104, 014304
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.104.014304
Isomeric states in neutron-rich nuclei near N=40
K. Wimmer1,2,3,*, F. Recchia4,5, S. M. Lenzi4,5, S. Riccetto6,7, T. Davinson8, A. Estrade9, C. J. Griffin8, S. Nishimura3, V. Phong3,10, P.-A. Söderström3, O. Aktas11, M. Al-Aqeel12,13, T. Ando2, H. Baba3, S. Bae14,15, S. Choi14,15, P. Doornenbal3, J. Ha14, L. Harkness-Brennan12, T. Isobe3, P. R. John4,5,†, D. Kahl8, G. Kiss3,‡, I. Kojouharov16, N. Kurz16, M. Labiche17, K. Matsui2, S. Momiyama2, D. R. Napoli18, M. Niikura2, C. Nita19, Y. Saito3, H. Sakurai2,3, H. Schaffner16, P. Schrock20, C. Stahl21, T. Sumikama3, V. Werner21, W. Witt21,16, and P. J. Woods8
Published 6 July 2021

Phys. Rev. C 104, 014316
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.104.014316
First lifetime investigations of N>82 iodine isotopes: The quest for collectivity
G. Häfner1,2, R. Lozeva1,*, H. Naïdja3, M. Lebois1, N. Jovančević1, D. Thisse1, D. Etasse4, R. L. Canavan5,6, M. Rudigier5,7, J. N. Wilson1, E. Adamska8, P. Adsley5, A. Algora9, M. Babo1, K. Belvedere5, J. Benito10, G. Benzoni11,12, A. Blazhev2, A. Boso6, S. Bottoni11,12, M. Bunce6, R. Chakma1, N. Cieplicka-Oryńczak13, S. M. Collins6, M. L. Cortés14,15, P. J. Davies16, C. Delafosse1, M. Fallot17, L. M. Fraile10, R.-B. Gerst2, D. Gjestvang18, V. Guadilla17, K. Hauschild1, C. Henrich7, I. Homm7, F. Ibrahim1, Ł. W. Iskra11,13, S. Jazwari5,6, A. Korgul8, P. Koseoglou7, Th. Kröll7, T. Kurtukian-Nieto19, L. Le-meur17, S. Leoni11,12, J. Ljungvall19, A. Lopez-Martens19, L. Matthieu19, K. Miernik8, J. Nemer1, S. Oberstedt20, W. Paulsen18, M. Piersa-Siłkowska8, Y. Popovitch1, C. Porzio11,12,21, L. Qi1, D. Ralet22,1, P. H. Regan5,6, D. Reygadas Tello23, K. Rezynkina24,25, V. Sanchez-Tembleque10, C. Schmitt25, P.-A. Söderström7,26, C. Sürder7, G. Tocabens1, V. Vedia10, D. Verney1, N. Warr2, B. Wasilewska13, J. Wiederhold7, M. S. Yavahchova27, F. Zeiser18, and S. Ziliani11,12
Published 19 July 2021

Phys. Rev. C 104, 014326
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.104.014326
Neutron excitations in ^{119}Ba
K. K. Zheng1,2, C. M. Petrache1, Z. H. Zhang3, A. Astier1, B. F. Lv1,*, P. T. Greenlees4, T. Grahn4, R. Julin4, S. Juutinen4, M. Luoma4, J. Ojala4, J. Pakarinen4, J. Partanen4,†, P. Rahkila4, P. Ruotsalainen4, M. Sandzelius4, J. Sarén4, H. Tann4,5, J. Uusitalo4, G. Zimba4, B. Cederwall6, Ö. Aktas6, A. Ertoprak6, W. Zhang6, S. Guo2,7, M. L. Liu2,7, X. H. Zhou2,7, I. Kuti8, B. M. Nyakó8, D. Sohler8, J. Timár8, C. Andreoiu9, M. Doncel5, D. T. Joss5, and R. D. Page5
Published 30 July 2021

Phys. Rev. C 104, 015808
https://journals.aps.org/prc/abstract/10.1103/PhysRevC.104.015808
Direct evaluation of high neutron density environment using (n,2n) reaction induced by laser-driven neutron source
Takato Mori1, Akifumi Yogo1, Takehito Hayakawa2, Seyed R. Mirfayzi1,3, Zechen Lan1, Yuki Abe1,4, Yasunobu Arikawa1, Daniil Golovin1, Tianyun Wei1, Yuki Honoki1, Mitsuo Nakai1, Kunioki Mima1, Hiroaki Nishimura1,5, Shinsuke Fujioka1, and Ryosuke Kodama1
Published 30 July 2021

2. News to Report

a. IOP E-book Series

The IOP Publishing Series in Nuclear Spectroscopy and Nuclear Structure is growing with innovative e-book content becoming available:

https://iopscience.iop.org/bookListInfo/iop-series-in-nuclear-spectroscopy-and-nuclear-structure.

While physical books are available to order, the main focus is on university libraries which can make any number of copies available to students if the university subscribes to the IOP e-book programme. This is very valuable when physical access to books has been as restricted as it has been in the last year.
A new title, Nuclear Data: A Primer, will be published in July 2021. This e-book written by David Jenkins and John Wood provides an introduction to nuclear structure from the starting point of global nuclear data. It will provide a valuable resource for final year UG courses as well as at PhD level. This title explores the capabilities of the e-book format with html-based figures which can be rotated and zoomed, as well as video-based exercises.

As a series editor, David Jenkins is very interested to hear from colleagues who have interest in contributing titles to this series. In particular, he is currently working with a group of physicists from academia and industry to develop a proposal for a new e-book with the working title, Nuclear Data: Applications to Society and Industry, which will explore the many ways that nuclear data is used to support the nuclear energy cycle, both fission and fusion, as well as the production and exploitation of medical isotopes.

This collaboration is open and if people would like to join and offer to contribute, please can they contact David Jenkins: david.jenkins@york.ac.uk

Contribution by David Jenkins (York)

b. IOP Nuclear Physics Group Colloquia

Next colloquium:
9th Sep 2021 15:00 to 17:00

Speakers : Prof. Brian Fields,
Dr. F. Cavanna, Mr. J. Marsh
Chairs : Dr Carlo Bruno

The IOP Nuclear Physics Group Colloquia is a series of online open access research colloquia for all those involved in nuclear physics. This series will highlight the latest results, new techniques and future prospects in the field, for the attention and discussion of the research community.

This open access colloquium will be hosted on behalf of the IOP Nuclear Physics Group by The University of Edinburgh.

Zoom meeting link:
https://ed-ac-uk.zoom.us/j/88055037309
Meeting ID: 880 5503 7309
Passcode: BBN_2021

Contribution by James Smallcombe (Liverpool)

3. Outreach Activity

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4. Media Interactions

a. The Scotsman Article


THE SCOTSMAN

Smart rules will keep everyone on side

The business of expertise

A real-life Dragons' Den could help Covid recovery

Inside Science

Put the Champagne away, there's no supernova in the sky, writes Alex Murphy

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Put the Champagne away, there's no supernova in the sky, writes **Alex Murphy**

Betelgeuse, the red super-giant star that forms the left shoulder of Orion, has been in the news again recently. New research has shown that the dramatic dimming of the star's light that might have heralded an imminent supernova as its core collapsed, was in fact simply due to a clump of dust partially blocking our view.

Betelgeuse is somewhere between 10 and 20 times the mass of our sun and, if located at the centre of our solar system, its surface would reach out almost to the orbit of Jupiter. At a mere 725 light years away, it's also quite close to Earth.

Alex Murphy of the University of Edinburgh had an article on work conducted at CERN ISOLDE published in The Scotsman in July. The article discusses nuclear reaction experiments and models which can simulate reactions which take place in the final stages of supernovae.