



UK Nuclear Activity

January 2021 Issue 91

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1. Nuclear Physics Publications for January (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 **102**, 054335

(Editor's Pick)

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.102.054335>

Excited states in ^{217}Ra populated in the α decay of ^{221}Th

[E. Parr](#)^{1,2}, [J. F. Smith](#)^{1,2}, [P. T. Greenlees](#)³, [K. Auranen](#)³, [R. Chapman](#)^{1,2}, [D. M. Cullen](#)⁴, [T. Grahn](#)³, [L. Grocutt](#)^{1,2}, [A. Herzán](#)^{3,5}, [R.-D. Herzberg](#)⁶, [D. Hodge](#)⁴, [U. Jakobsson](#)^{3,*}, [R. Julin](#)³, [S. Juutinen](#)³, [J. Konki](#)^{3,†}, [C. McPeake](#)⁶, [D. Mengoni](#)⁷, [A. K. Mistry](#)⁶, [K. F. Mulholland](#)^{1,2}, [G. G. O'Neill](#)⁶, [J. Pakarinen](#)³, [P. Papadakis](#)^{3,‡}, [J. Partanen](#)³, [P. Peura](#)³, [P. Rahkila](#)³, [P. Ruotsalainen](#)³, [M. Sandzelius](#)³, [J. Sarén](#)³, [M. Scheck](#)^{1,2}, [C. Scholey](#)³, [M. Siciliano](#)^{3,7,§}, [M. Smolen](#)^{1,2}, [J. Sorri](#)^{3,||}, [S. Stolze](#)^{3,¶}, [M. J. Taylor](#)^{4,#}, and [J. Uusitalo](#)³

Published 30 November 2020

Phys. Rev. C **103**, 014301

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.103.014301>

Highly deformed band structures due to core excitations in ^{123}Xe

[Anwasha Basu](#), [A. K. Singh](#), [I. Ragnarsson](#), [B. G. Carlsson](#), [A. Kardan](#), [G. B. Hagemann](#), [G. Sletten](#), [B. Herskind](#), [H. Hübel](#), [S. Chmel](#), [A. N. Wilson](#), [J. Rogers](#), [R. V. F. Janssens](#), [M. P. Carpenter](#), [T. L. Khoo](#), [F. G. Kondev](#), [T. Lauritsen](#), [S. Zhu](#), [A. Korichi](#), [P. Fallon](#), [B. M. Nyakó](#), and [J. Timár](#)

Published 4 January 2021

Phys. Rev. C **103**, 014311

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.103.014311>

Onset of triaxial deformation in ^{66}Zn and properties of its first excited 0^+ state studied by means of Coulomb excitation

[M. Rocchini^{1,2,3,*}](#), [K. Hadyńska-Kleń^{4,5}](#), [A. Nannini^{1,2}](#), [A. Goasduff^{6,7}](#), [M. Zielińska⁸](#), [D. Testov^{6,7}](#), [T. R. Rodríguez⁹](#), [A. Gargano¹⁰](#), [F. Nowacki¹¹](#), [G. De Gregorio^{10,12}](#), [H. Naïdja¹³](#), [P. Sona^{1,2}](#), [J. J. Valiente-Dobón⁴](#), [D. Mengoni^{6,7}](#), [P. R. John^{6,7,14}](#), [D. Bazzacco^{6,7}](#), [G. Benzoni¹⁵](#), [A. Boso^{6,7}](#), [P. Cocconi⁴](#), [M. Chiari^{1,2}](#), [D. T. Doherty¹⁶](#), [F. Galtarossa⁴](#), [G. Jaworski⁴](#), [M. Komorowska⁵](#), [N. Marchini^{1,17}](#), [M. Matejska-Minda^{5,18}](#), [B. Melon¹](#), [R. Menegazzo^{6,7}](#), [P. J. Napiorkowski⁵](#), [D. Napoli⁴](#), [M. Ottanelli¹](#), [A. Perego^{1,2}](#), [L. Ramina⁷](#), [M. Rampazzo⁷](#), [F. Recchia^{6,7}](#), [S. Riccetto^{19,20}](#), [D. Rosso⁴](#), and [M. Siciliano^{4,6}](#)

Published 19 January 2021

Phys. Rev. C **103**, 014314

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.103.014314>

In-beam γ -ray spectroscopy of $^{62,64}\text{Cr}$

[A. Gade^{1,2}](#), [R. V. F. Janssens^{3,4}](#), [D. Bazin^{1,2}](#), [P. Farris^{1,2}](#), [A. M. Hill^{1,2}](#), [S. M. Lenzi⁵](#), [J. Lj¹](#), [D. Little^{3,4}](#), [B. Longfellow^{1,2,*}](#), [F. Nowacki^{6,7}](#), [A. Poves⁸](#), [D. Rhodes^{1,2}](#), [J. A. Tostevin⁹](#), and [D. Weisshaar¹](#)

Published 20 January 2021

Phys. Rev. C **103**, 014318

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.103.014318>

High-resolution laser spectroscopy of $^{27-32}\text{Al}$

[H. Heylen^{1,2,3,*}](#), [C. S. Devlin⁴](#), [W. Gins^{2,5}](#), [M. L. Bissell⁶](#), [K. Blaum³](#), [B. Cheal⁴](#), [L. Filippin⁷](#), [R. F. Garcia Ruiz^{1,6,†}](#), [M. Godefroid⁷](#), [C. Gorges⁸](#), [J. D. Holt^{9,10}](#), [A. Kanellakopoulos²](#), [S. Kaufmann^{8,11}](#), [Á. Koszorus²](#), [K. König^{8,‡}](#), [S. Malbrunot-Ettenauer¹](#), [T. Miyagi⁹](#), [R. Neugart^{3,11}](#), [G. Neyens^{1,2}](#), [W. Nörtershäuser⁸](#), [R. Sánchez¹²](#), [F. Sommer⁸](#), [L. V. Rodríguez^{3,13}](#), [L. Xie⁶](#), [Z. Y. Xu²](#), [X. F. Yang^{2,14}](#), and [D. T. Yordanov¹³](#)

Published 25 January 2021

Phys. Rev. C **103**, 014324

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.103.014324>

β decay of the very neutron-deficient ^{60}Ge and ^{62}Ge nuclei

[S. E. A. Orrigo^{1,*}](#), [B. Rubio¹](#), [W. Gelletly^{1,2}](#), [P. Aguilera^{1,3}](#), [A. Algora^{1,4}](#), [A. I. Morales¹](#), [J. Agramunt¹](#), [D. S. Ahn⁵](#), [P. Ascher⁶](#), [B. Blank⁶](#), [C. Borcea⁷](#), [A. Boso⁸](#), [R. B. Cakirli⁹](#), [J. Chiba¹⁰](#), [G. de Angelis¹¹](#), [G. de France¹²](#), [F. Die¹³](#), [P. Doornenbal⁵](#), [Y. Fujita¹⁴](#), [N. Fukuda⁵](#), [E. Ganioglu⁹](#), [M. Gerbaux⁶](#), [J. Giovinazzo⁶](#), [S. Go¹⁵](#), [T. Goigoux⁶](#), [S. Grévy⁶](#), [V. Guadilla¹](#), [N. Inabe⁵](#), [G. G. Kiss^{4,5}](#), [T. Kubo⁵](#), [S. Kubono⁵](#), [T. Kurtukian-Nieto⁶](#), [D. Lubos¹⁶](#), [C. Magron⁶](#), [F. Molina³](#), [A. Montaner-Pizá¹](#), [D. Napoli¹¹](#), [D. Nishimura¹⁷](#), [S. Nishimura⁵](#), [H. Oikawa¹⁰](#), [V. H. Phong^{5,18}](#), [H. Sakurai^{5,19}](#), [Y. Shimizu⁵](#), [C. Sidong⁵](#), [P.-A. Söderström⁵](#), [T. Sumikama⁵](#), [H. Suzuki⁵](#), [H. Takeda⁵](#), [Y. Takei¹⁰](#), [M. Tanaka¹⁴](#), [J. Wu⁵](#), and [S. Yagi¹⁰](#)

Published 29 January 2021

Phys. Rev. C **103**, 014604

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.103.014604>

Role of continuum in nuclear direct reactions with one-neutron halo nuclei: A one-dimensional model

[L. Moschini^{1,*}](#), [A. M. Moro²](#), and [A. Vitturi^{3,4}](#)

Published 8 January 2021

Phys. Rev. C **103**, 014614

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.103.014614>

Observation of new neutron-rich isotopes in the vicinity of ^{110}Zr

[T. Sumikama](#)^{1,2,*}, [N. Fukuda](#)¹, [N. Inabe](#)¹, [D. Kameda](#)¹, [T. Kubo](#)¹, [Y. Shimizu](#)¹, [H. Suzuki](#)¹, [H. Takeda](#)¹, [K. Yoshida](#)¹, [H. Baba](#)¹, [F. Browne](#)^{3,1}, [A. M. Bruce](#)³, [R. Carroll](#)⁴, [N. Chiga](#)^{2,1}, [R. Daido](#)⁵, [F. Didierjean](#)⁶, [P. Doornenbal](#)¹, [Y. Fang](#)⁵, [G. Gey](#)^{7,1,8}, [E. Ideguchi](#)⁹, [T. Isobe](#)¹, [S. Lalkovskij](#)¹⁰, [Z. Li](#)¹¹, [G. Lorusso](#)^{1,12}, [R. Lozeva](#)^{6,13}, [H. Nishibata](#)⁵, [S. Nishimura](#)¹, [I. Nishizuka](#)², [A. Odahara](#)⁵, [Z. Patel](#)⁴, [Zs. Podolyák](#)⁴, [P. H. Regan](#)^{4,12}, [S. Rice](#)⁴, [O. J. Roberts](#)³, [H. Sakurai](#)^{1,14}, [G. S. Simpson](#)¹⁵, [L. Sinclair](#)¹⁶, [P.-A. Söderström](#)¹, [M. Tanaka](#)⁹, [J. Taprogge](#)^{17,18,1}, [H. Watanabe](#)^{19,1}, [V. Werner](#)^{20,21}, [O. Wieland](#)²², [J. Wu](#)^{11,1}, [Z. Y. Xu](#)¹⁴, and [A. Yagi](#)⁵

Published 27 January 2021

Phys. Rev. C **103**, 014902

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.103.014902>

Correlations of azimuthal anisotropy Fourier harmonics with subevent cumulants in pPb collisions at $\sqrt{s_{NN}}=8.16\text{TeV}$

[A. M. Sirunyan](#) *et al.* (CMS Collaboration)

Published 14 January 2021

Phys. Rev. C **103**, 015805

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.103.015805>

Reevaluation of the $^{22}\text{Ne}(\alpha,\gamma)^{26}\text{Mg}$ and $^{22}\text{Ne}(\alpha,n)^{25}\text{Mg}$ reaction rates

[Philip Adsley](#)^{1,2,3,*}, [Umberto Battino](#)^{4,†}, [Andreas Best](#)^{5,6}, [Antonio Cacioli](#)^{7,8}, [Alessandra Guglielmetti](#)⁹, [Gianluca Imbriani](#)^{5,6}, [Heshani Jayatissa](#)¹⁰, [Marco La Cognata](#)¹¹, [Livio Lamia](#)^{12,11,13}, [Eliana Masha](#)⁹, [Cristian Massimi](#)^{14,15}, [Sara Palmerini](#)^{16,17}, [Ashley Tattersall](#)^{4,†}, and [Raphael Hirschi](#)^{18,19,†}

Published 19 January 2021

Phys. Rev. C **103**, 015807

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.103.015807>

Sub-threshold states in ^{19}Ne relevant to $^{18}\text{F}(\text{p},\alpha)^{15}\text{O}$

[J. E. Riley](#)¹, [A. M. Laird](#)^{1,*}, [N. de Séréville](#)^{2,†}, [A. Parikh](#)^{3,4}, [S. P. Fox](#)¹, [F. Hammache](#)², [I. Stefan](#)², [P. Adsley](#)^{2,‡}, [M. Assié](#)², [B. Bastin](#)⁵, [F. Boulay](#)⁵, [A. Coc](#)², [S. Franchoo](#)², [R. Garg](#)^{1,5}, [S. A. Gillespie](#)¹, [V. Guimaraes](#)^{2,6}, [C. Hamadache](#)², [N. Hubbard](#)¹, [J. Kiener](#)², [A. Lefebvre-Schuhl](#)², [F. de Oliveira Santos](#)⁵, [A. Remadi](#)⁵, [L. Perrot](#)², [D. Suzuki](#)², [G. Verde](#)², [V. Tatischeff](#)², and [M. Williams](#)¹

Published 28 January 2021

Phys. Rev. Lett. **126**, 032502

<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.126.032502>

Laser Spectroscopy of Neutron-Rich $^{207,208}\text{Hg}$ Isotopes: Illuminating the Kink and Odd-Even Staggering in Charge Radii across the $N=126$ Shell Closure

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Published 22 January 2021

Phys. Rev. Lett. **126**, 032503

<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.126.032503>

Spectroscopy along Flerovium Decay Chains: Discovery of 280Ds and an Excited State in 282Cn

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Phys. Rev. Lett. **126**, 042501

<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.126.042501>

Precision Mass Measurements of Neutron-Rich Scandium Isotopes Refine the Evolution of N=32 and N=34 Shell Closures

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Published 26 January 2021

Phys. Rev. Lett. **126**, 042701

<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.126.042701>

Exploiting Isospin Symmetry to Study the Role of Isomers in Stellar Environments

[S. Hallam¹](#), [G. Lotay¹](#), [A. Gade^{2,3,4}](#), [D. T. Doherty¹](#), [J. Belarge²](#), [P. C. Bender^{2,*}](#), [B. A. Brown^{2,3,4}](#), [J. Browne^{2,3,4}](#), [W. N. Catford¹](#), [B. Elman^{2,3}](#), [A. Estrad⁵](#), [M. R. Hall⁶](#), [B. Longfellow^{2,3}](#), [E. Lunderberg^{2,3}](#), [F. Montes^{2,4}](#), [M. Moukaddam^{1,†}](#), [P. O'Malley⁶](#), [W.-J. Ong^{2,3}](#), [H. Schatz^{2,3,4}](#), [D. Seweryniak⁷](#), [K. Schmidt^{2,4,‡}](#), [N. K. Timofeyuk¹](#), [D. Weisshaar²](#), and [R. G. T. Zegers^{2,3,4}](#)

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2. News to Report

a. Nuclear Physics Group Early Career Prize: Call for Nominations

IOP Nuclear Physics Early Career Researcher Prize

A reminder that nominations for the IOP Nuclear Physics Group Early Career Researcher Prize can still be submitted. This prize is awarded to an individual who has made a significant contribution to either experimental or theoretical nuclear physics research in either fundamental or applied areas.

Researchers who are within 6 years of the completion of their Ph.D. or, for those without a Ph.D, within 10 years of the start of their first employment contract where research is the primary function of their role are eligible. The winner receives £250 and is invited to present at the annual IOP Nuclear Physics Conference. Details of the award can be found on our [webpage](#) along with a nomination form for

download. This should be sent, along with a supporting statement from a referee external to the nominee's current place of study or work, to the Secretary of the Nuclear Physics Group, James Benstead, at james.benstead@awe.co.uk no later than

5 February 2021.

We also support anyone wishing to self-nominate, though students should have the support of their supervisor in doing so.

*Contribution by David Sharp
(University of Manchester)*

3. Outreach Activity

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4. Media Interactions

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