



UK Nuclear Activity

December 2019 Issue 78

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1. *Nuclear Physics Publications for December (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. Lett. B **800**, 135110

<https://www.sciencedirect.com/science/article/pii/S0370269319308329?via%3Dihub>

Nucleon-nucleon correlations and the single-particle strength in atomic nuclei

[S.Paschalis](#)^a, [M.Petri](#)^a, [A.O.Macchiavelli](#)^b, [O.Hen](#)^c and [E.Piasetzky](#)^d

Published 10 January 2020

Phys. Rev. C **100**, 054330

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.100.054330>

Lifetime measurements of short-lived excited states, and shape changes in ⁶⁹As and ⁶⁶Ge nuclei

[M. Matejska-Minda](#)^{1,*}, [P. Bednarczyk](#)¹, [B. Fornal](#)¹, [F. R. Xu](#)², [W. Y. Liang](#)², [G. de Angelis](#)³, [S. Aydin](#)^{4,5}, [S. Brambilla](#)⁶, [M. Ciemala](#)¹, [E. Farnea](#)^{3,†}, [T. Hüyük](#)³, [G. Jaworski](#)⁷, [M. Kmiecik](#)¹, [M. Krzysiek](#)¹, [S. Leoni](#)^{6,8}, [A. Maj](#)¹, [R. Menegazzo](#)⁴, [W. Męczyński](#)¹, [C. Michelagnoli](#)^{3,9}, [M. Palacz](#)⁷, [F. Recchia](#)⁴, [E. Sahin](#)^{3,10}, [J. Styczeń](#)¹, [B. Szpak](#)¹, [C. A. Ur](#)^{4,11}, [R. Wadsworth](#)¹², and [M. Ziębliński](#)¹

Published 26 November 2019

Phys. Rev. C **100**, 065805

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.100.065805>

Measurement of the $2^+ \rightarrow 0^+$ ground-state transition in the β decay of ^{20}F

[O. S. Kirsebom^{1,2,*}](#), [M. Hukkanen³](#), [A. Kankainen³](#), [W. H. Trzaska³](#), [D. F. Strömberg^{4,5}](#), [G. Martínez-Pinedo^{5,4,†}](#), [K. Andersen¹](#), [E. Bodewits⁶](#), [B. A. Brown⁷](#), [L. Canete³](#), [J. Cederkäll⁸](#), [T. Enqvist⁹](#), [T. Eronen³](#), [H. O. U. Fynbo¹](#), [S. Geldhof³](#), [R. de Groot³](#), [D. G. Jenkins¹⁰](#), [A. Jokinen³](#), [P. Joshi¹⁰](#), [A. Khanam^{3,11}](#), [J. Kostensalo³](#), [P. Kuusiniemi⁹](#), [K. Langanke^{5,4}](#), [I. Moore³](#), [M. Munch¹](#), [D. A. Nesterenko³](#), [J. D. Ovejas¹²](#), [H. Penttilä³](#), [I. Pohjalainen³](#), [M. Reponen³](#), [S. Rinta-Antila³](#), [K. Riisager¹](#), [A. de Roubin³](#), [P. Schotanus⁶](#), [P. C. Srivastava¹³](#), [J. Suhonen³](#), [J. A. Swartz¹](#), [O. Tengblad¹²](#), [M. Vilen³](#), [S. Vínals¹²](#), and [J. Äystö³](#)

Published 24 December 2019

Phys. Rev. C **100**, 061303(R)

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.100.061303>

Experimental identification of the $T=1, J^\pi=6^+$ state of ^{54}Co and isospin symmetry in $A=54$ studied via one-nucleon knockout reactions

[M. Spieker^{1,*}](#), [D. Weisshaar¹](#), [A. Gade^{1,2}](#), [B. A. Brown^{1,2}](#), [P. Adrich^{1,†}](#), [D. Bazin^{1,2}](#), [M. A. Bentley³](#), [J. R. Brown³](#), [C. M. Campbell^{1,2,†}](#), [C. Aa. Diget³](#), [B. Elman^{1,2}](#), [T. Glasmacher^{1,2}](#), [M. Hill^{1,2}](#), [B. Longfellow^{1,2}](#), [B. Pritychenko⁴](#), [A. Ratkiewicz^{1,2,5}](#), [D. Rhodes^{1,2}](#), and [J. A. Tostevin⁵](#)

Published 11 December 2019

Phys. Rev. C **100**, 062501(R)

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.100.062501>

Lepton scattering from ^{40}Ar and ^{48}Ti in the quasielastic peak region

[C. Barbieri^{1,*}](#), [N. Rocco^{2,3,1}](#), and [V. Somà⁴](#)

Published 30 December 2019

Phys. Rev. C **100**, 064301

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.100.064301>

Linear response theory in asymmetric nuclear matter for Skyrme functionals including spin-orbit and tensor terms. II. Charge exchange

[D. Davesne^{1,*}](#), [A. Pastore^{2,†}](#), and [J. Navarro^{3,‡}](#)

Published 2 December 2019

Phys. Rev. C **100**, 064304

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.100.064304>

Lifetimes of the 4^+_{1-} states of ^{206}Po and ^{204}Po : A study of the transition from noncollective seniority-like mode to collectivity

[M. Stoyanova¹](#), [G. Rainovski^{1,*}](#), [J. Jolie²](#), [N. Pietralla³](#), [A. Blazhev²](#), [M. Beckers²](#), [A. Dewald²](#), [M. Djongolov¹](#), [A. Esmaylzadeh²](#), [C. Fransen²](#), [L. M. Gerhard²](#), [K. A. Gladnishki¹](#), [S. Herb²](#), [P. R. John³](#), [V. Karayonchev²](#), [J. M. Keatings⁴](#), [R. Kern³](#), [L. Knafla²](#), [D. Kocheva¹](#), [L. Kornweibel²](#), [Th. Kröll³](#), [M. Ley²](#), [K. M. Mashtakov⁴](#), [C. Müller-Gatermann²](#), [J.-M. Régis²](#), [M. Scheck⁴](#), [K. Schomacker²](#), [J. Sinclair⁴](#), [P. Spagnoletti⁴](#), [C. Sürder³](#), [N. Warr²](#), [V. Werner³](#), and [J. Wiederhold³](#)

Published 6 December 2019

Phys. Rev. C **100**, 064308

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.100.064308>

Lifetime measurements of $N \approx 20$ phosphorus isotopes using the AGATA γ -ray tracking spectrometer

L. Grocutt¹, R. Chapman^{1,*}, M. Bouhelal², F. Haas^{3,4}, A. Goasduff⁵, J. F. Smith¹, S. Courtin^{3,4}, D. Bazzacco^{6,7}, T. Braunroth⁸, L. Capponi^{1,9}, L. Corradi⁵, X. Derks¹, P. Desesquelles^{10,11}, M. Doncel^{12,13}, E. Fioretto⁵, A. Gottardo⁵, V. Liberati¹, B. Melon¹⁴, D. Mengoni^{6,7}, C. Michelagnoli¹⁵, T. Mijatović¹⁶, V. Modamio⁵, G. Montagnoli⁶, D. Montanari⁶, K. F. Mulholland¹, D. R. Napoli⁵, C. Petrache¹⁷, A. Pipidis⁵, F. Recchia⁶, E. Sahin^{5,18}, P. P. Singh¹⁹, A. M. Stefanini⁵, S. Szilner^{5,16}, and J. J. Valiente-Dobón⁵

Published 13 December 2019

Phys. Rev. C **100**, 064613

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.100.064613>

Reaction channel contributions to the helion optical potential

R. S. Mackintosh and N. Keeley

Published 26 December 2019

Phys. Rev. C **100**, 064901

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.100.064901>

Measurement of angular and momentum distributions of charged particles within and around jets in Pb+Pb and pp collisions at $\sqrt{s_{NN}} = 5.02$ TeV with the ATLAS detector

G. Aad et al. (ATLAS Collaboration)

Published 2 December 2019

Phys. Rev. C **100**, 064908

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.100.064908>

Probing the chiral magnetic wave in pPb and PbPb collisions at $\sqrt{s_{NN}} = 5.02$ TeV using charge-dependent azimuthal anisotropies

A. M. Sirunyan et al. (CMS Collaboration)

Published 18 December 2019

Phys. Rev. C **100**, 065205

<https://journals.aps.org/prc/abstract/10.1103/PhysRevC.100.065205>

Cross section for $\gamma n \rightarrow \pi^0 n$ measured at the Mainz A2 experiment

W. J. Briscoe¹, M. Hadžimehmedović², A. E. Kudryavtsev^{3,1}, V. V. Kulikov³, M. A. Martemianov³, I. I. Strakovsky^{1,*}, A. Švarc^{4,5}, V. E. Tarasov³, R. L. Workman¹, S. Abt⁶, P. Achenbach⁷, C. S. Akondi⁸, F. Afzal⁹, P. Aguar-Bartolomé⁷, Z. Ahmed¹⁰, J. R. M. Annand¹¹, H. J. Arends⁷, K. Bantawa⁸, M. Bashkanov¹², R. Beck⁹, M. Biroth⁷, N. Borisov¹³, A. Braghieri¹⁴, S. A. Bulychjov³, F. Cividini⁷, C. Collicott¹⁵, S. Costanza^{16,14}, A. Denig⁷, E. J. Downie¹, P. Drexler⁷, S. Fegan¹, M. I. Ferretti Bondy⁷, S. Gardner¹¹, D. Ghosal⁶, D. I. Glazier¹¹, I. Gorodnov¹³, W. Gradl⁷, M. Günther⁶, D. Gurevich¹⁷, L. Heijkenkjöld⁷, D. Hornidge¹⁸, G. M. Huber¹⁰, A. Käser⁶, V. L. Kashevarov^{7,13}, S. Kay¹⁰, M. Korolija^{4,5}, B. Krusche⁶, A. Lazarev¹³, K. Livingston¹¹, S. Lutterer⁶, I. J. D. MacGregor¹¹, R. Macrae¹¹, D. M. Manley⁸, P. P. Martel⁷, J. C. McGeorge¹¹, D. G. Middleton^{7,18}, R. Miskimen¹⁹, E. Mornacchi⁷, A. Mushkarenkov^{14,19}, C. Mullen¹¹, A. Neganov¹³, A. Neiser⁷, M. Ostrick⁷, P. B. Otte⁷, H. Osmanović², R. Omerović², B. Oussena^{7,1}, D. Paudyal¹⁰, P. Pedroni¹⁴, A. Powell¹¹, S. N. Prakhov^{7,20}, G. Ron^{21,1}, T. Rostomyan⁶, A. Sarty¹⁵, C. Sfienti⁷, V. Sokhoyan⁷, K. Spieker⁹, J. Stahov², O. Steffen⁷, I. Supek^{4,5}, A. Thiel^{9,11}, M. Thiel⁷, A. Thomas⁷, L. Tiator⁷, M. Unverzagt⁷, Yu. A. Usov¹³, N. K. Walford⁶, D. P. Watts¹², S. Wagner⁷, D. Werthmüller¹², J. Wettig⁷, M. Wolfes⁷, and N. Zachariou¹²

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2. News to Report

a. Reminder: The 24th UK Monte Carlo User Group Meeting (MCNEG)



A limited number of spaces are still available for the 24th MCNEG meeting which will be held at the Culham Conference Centre, Oxfordshire 14th-15th January 2020. This meeting provides a forum for new and experienced users of Monte Carlo software for radiation transport. We would like to extend our invitation to academics, researchers and students from the fields of medical physics, radiation dosimetry, radiation detectors, reactor, space, shielding modelling and related fields.

Thanks to sponsorship from AWE plc this year's conference will be **free to attend**.

If you would like to attend please email: mcneg@awe.co.uk ASAP with: Name, Affiliation, Abstract and Dietary requirements.

Venue address:
Culham Conference Centre, Culham Science Centre, Abingdon, Oxfordshire, OX14 3DB.
Parking is available on site or there is a train station close by (~5 min walk): Culham railway station serves the village of Culham in Oxfordshire. It is on the Cherwell Valley Line between Didcot Parkway and Banbury. It is served by local train services provided by Great Western Railway.

A few of the local hotels are:

- The Hilton Garden Inn – Abingdon
- Courtyard by Marriott - Oxford South
- The Cosener's House – Abingdon

For more information, to submit an abstract, or to register, please contact:
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Or see www.mcneg.org.uk for further details.

Contributed by Simon Rice (AWE)

b. IOP Award Nominations

Nominations are sought for the IOP Ernest Rutherford Medal and Prize for distinguished contributions to nuclear physics.

An IOP award provides a tremendous boost to a winner's career and reputation. Winners receive a prestigious medal, a certificate and £1000 at the IOP's annual awards event. It is important that we encourage and celebrate the physics community in all its diversity, as finding solutions to urgent global challenges depends on our community continuing to grow, thrive and become more diverse.

The list of previous winners includes many of the UK and Ireland's most prominent and influential physicists, and we look forward to recognising those who will continue to shape our future.

Furthermore, if there are any individuals that you feel deserving of any of our other awards, we would encourage a nomination to celebrate the other outstanding achievements in physics and by physicists across the UK and Ireland. More information and the nomination process is available on the IOP website - <https://beta.iop.org/awards>.

Contribution by Andrew Le Hegarat (IOP)



The Rutherford Medal

3. Outreach Activity

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4. Media Interactions

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