

PHYSICAL REVIEW CTM

For editorial and subscription correspondence,
please see inside front cover
(ISSN: 2469-9985)

PERIODICALS

Postmaster send address changes to:

PHYSICAL REVIEW C
APS Subscription Services
P.O. Box 41
Annapolis Junction, MD 20701

THIRD SERIES, VOLUME 107, NUMBER 2

CONTENTS

FEBRUARY 2023

LETTERS

Nuclear Structure

- Spectroscopy along flerovium decay chains. II. Fine structure in odd- A ^{289}Fl (6 pages) L021301
D. M. Cox *et al.*
- Zero- and finite-temperature electromagnetic strength distributions in closed- and open-shell nuclei from first principles (6 pages) L021302
Y. Beaujeault-Taudière, M. Frosini, J.-P. Ebran, T. Duguet, R. Roth, and V. Somà
- Microscopic aspects of γ softness in atomic nuclei (6 pages) L021303
Nazira Nazir, S. Jehangir, S. P. Rouoof, G. H. Bhat, J. A. Sheikh, N. Rather, and S. Frauendorf
- Imprints of α clustering in the density profiles of ^{12}C and ^{16}O (5 pages) L021304
W. Horiuchi and N. Itagaki
- Near-threshold resonances in ^{11}C and the $^{10}\text{B}(p, \alpha)^7\text{Be}$ aneutronic reaction (5 pages) L021305
J. Okołowicz, M. Płoszajczak, and W. Nazarewicz

Nuclear Reactions

- Experimental evidence of the effect of nuclear shells on fission dissipation and time (6 pages) L021601
D. Ramos, M. Caamaño, F. Farget, C. Rodríguez-Tajes, A. Lemasson, C. Schmitt, L. Audouin,
J. Benlliure, E. Casarejos, E. Clement, D. Cortina, O. Delaune, X. Derkx, A. Dijon, D. Doré,
B. Fernández-Domínguez, G. de France, A. Heinz, B. Jacquot, C. Paradela, M. Rejmund,
T. Roger, and M.-D. Salsac
- Time evolution of a decaying quantum state: Evaluation and onset of nonexponential decay (6 pages) L021602
Markus Nöth

Relativistic Nuclear Collisions

- Scaling approach to nuclear structure in high-energy heavy-ion collisions (7 pages) L021901
Jiangyong Jia and Chunjian Zhang
- Vortex rings in heavy-ion collisions at energies $\sqrt{s_{NN}} = 3\text{--}30$ GeV and possibility of their observation (6 pages) L021902
Yu. B. Ivanov

ARTICLES

Nucleon-Nucleon Interaction, Few-Body Systems

- Time-reversal-invariance violation in the Nd system and large N_C (10 pages) 024001
Anna C. Bowman and Jared Vanasse



2469-9985(202302)107:2;1-3

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW C

THIRD SERIES, VOLUME 107, NUMBER 2

FEBRUARY 2023

<i>Ab initio</i> calculation of charge-symmetry breaking in $A = 7$ and 8Λ hypernuclei (10 pages)	024002
Hoai Le, Johann Haidenbauer, Ulf-G. Meißner, and Andreas Nogga	
Nuclear Structure	
Spectroscopy along flerovium decay chains. III. Details on experiment, analysis, ^{282}Cn , and spontaneous fission branches (12 pages)	024301
A. Sămark-Roth <i>et al.</i>	
Cluster mean-field description of α emission (11 pages)	024302
A. Dumitrescu and D. S. Delion	
Complex eigenenergy of the giant dipole resonance for ^{16}O by the Jost function within the random-phase approximation framework (15 pages)	024303
K. Mizuyama, N. Nhu Le, T. Dieu Thuy, N. Hoang Tung, D. Quang Tam, and T. V. Nhan Hao	
Optimization of the generator coordinate method with machine-learning techniques for nuclear spectra and neutrinoless double- β decay: Ridge regression for nuclei with axial deformation (14 pages)	024304
X. Zhang, W. Lin, J. M. Yao, C. F. Jiao, A. M. Romero, T. R. Rodríguez, and H. Hergert	
Parity-doublet bands in the odd- A isotones ^{237}U and ^{239}Pu investigated by a particle-number-conserving method based on the cranked shell model (7 pages)	024305
Jun Zhang, Xiao-Tao He, Yu-Chun Li, and Hai-Qian Zhang	
Nuclear magnetic moment of the neutron-rich nucleus ^{21}O (7 pages)	024306
Y. Ishibashi, A. Gladkov, Y. Ichikawa, A. Takamine, H. Nishibata, T. Sato, H. Yamazaki, T. Abe, J. M. Daugas, T. Egami, T. Fujita, G. Georgiev, K. Imamura, T. Kawaguchi, W. Kobayashi, Y. Nakamura, A. Ozawa, M. Sanjo, N. Shimizu, D. Tominaga, L. C. Tao, K. Asahi, and H. Ueno	
Bohr-Weisskopf effect in the potassium isotopes (6 pages)	024307
Yu. A. Demidov, M. G. Kozlov, A. E. Barzakh, and V. A. Yerokhin	
Shape and multiple shape coexistence of nuclei within covariant density functional theory (10 pages)	024308
Y. L. Yang, P. W. Zhao, and Z. P. Li	
Cluster-shell competition and effect of adding hyperons (7 pages)	024309
Naoyuki Itagaki and Emiko Hiyama	
Normal ordering of three-nucleon interactions for <i>ab initio</i> calculations of heavy nuclei (14 pages)	024310
K. Hebeler, V. Durant, J. Hoppe, M. Heinz, A. Schwenk, J. Simonis, and A. Tichai	
Exploring the limits of existence of proton-rich nuclei in the $Z = 70\text{--}82$ region (9 pages)	024311
E. M. Lykiardopoulou, G. Audi, T. Dickel, W. J. Huang, D. Lunney, Wolfgang R. Plaß, M. P. Reiter, J. Dilling, and A. A. Kwiatkowski (TITAN Collaboration)	
Single-particle configurations of low- and medium-spin states in ^{63}Cu (16 pages)	024312
S. Chatterjee, B. Mondal, S. Samanta, S. Das, R. Raut, S. S. Ghugre, P. C. Srivastava, A. K. Sinha, U. Garg, Neelam, Naveen Kumar, P. Jones, Md. S. R. Laskar, F. S. Babra, S. Biswas, S. Saha, P. Singh, and R. Palit	
Measurements and computational analysis of the natural decay of ^{176}Lu (19 pages)	024313
F. G. A. Quarati, G. Bollen, P. Dorenbos, M. Eibach, K. Gulyuz, A. Hamaker, C. Izzo, D. K. Keblbeck, X. Mougeot, D. Puentes, M. Redshaw, R. Ringle, R. Sandler, J. Surbrook, and I. Yandow	
Microscopic study of the deformed neutron halo of ^{31}Ne (7 pages)	024314
R. Takatsu, Y. Suzuki, W. Horiuchi, and M. Kimura	

(Continued)

CONTENTS - Continued

PHYSICAL REVIEW C

THIRD SERIES, VOLUME 107, NUMBER 2

FEBRUARY 2023

Fock space representations of Bogolyubov transformations as spin representations (8 pages)	024315
K. Neergård	
Nuclear Reactions	
Investigating the time dependence of neutron-proton equilibration using molecular dynamics simulations (10 pages)	024601
A. Jedelev, K. Hagel, M. Q. Sorensen, B. Harvey, A. Abbott, J. Gauthier, A. Hannaman, A. A. Hood, Y.-W. Lui, L. McCann, A. B. McIntosh, L. A. McIntosh, S. Schultz, Z. Tobin, R. Wada, M. Youngs, and S. Yennello	
Investigating neutron transfer in the ${}^6\text{Li} + {}^{124}\text{Sn}$ system (6 pages)	024602
V. V. Parkar, A. Parmar, Prasanna M., V. Jha, and S. Kailas	
Excitation-energy dependence of the fission-fragment neutron-excess ratio (5 pages)	024603
H. Pařca, A. V. Andreev, G. G. Adamian, and N. V. Antonenko	
Production cross sections of new neutron-rich isotopes with $Z = 92\text{--}106$ in the multinucleon transfer reaction ${}^{197}\text{Au} + {}^{232}\text{Th}$ (11 pages)	024604
Yu-Hai Zhang, Jing-Jing Li, Na Tang, Xin-Rui Zhang, Zhong Liu, and Feng-Shou Zhang	
Multichannel experimental and theoretical approach to the ${}^{12}\text{C}({}^{18}\text{O}, {}^{18}\text{F}){}^{12}\text{B}$ single-charge-exchange reaction at 275 MeV: Initial-state interaction and single-particle properties of nuclear wave functions (19 pages)	024605
A. Spatafora <i>et al.</i> (NUMEN Collaboration)	
Measurement of the ${}^{239}\text{Pu}(n, f)$ cross section from 4 keV to 100 MeV using the white neutron source at the CSNS Back-n facility (9 pages)	024606
Yijia Qiu, Changlin Lan, Yonghao Chen, Liyang Jiang, Jie Bao, Yiwei Yang, Zhongwei Wen, Rong Liu, Xichao Ruan, Jingyu Tang, Jie Ren, Hantao Jing, Guangyuan Luan, Ruirui Fan, Yangbo Nie, Xianlin Yang, Xiaojun Li, Han Yi, Wei Jiang, Tao Ye, Yi Yang, Shilong Liu, and Jincheng Wang	
Quasielastic charged-current neutrino-nucleus scattering with relativistic nuclear models (7 pages)	024607
K. S. Kim, Soonchul Choi, Tsuyoshi Miyatsu, Myung-Ki Cheoun, Hungchong Kim, and W. Y. So	
Neutron-skin values and matter and neutron radii determined from reaction cross sections of proton scattering on ${}^{12}\text{C}$, ${}^{40,48}\text{Ca}$, ${}^{58}\text{Ni}$, and ${}^{208}\text{Pb}$ (10 pages)	024608
Tomotsugu Wakasa, Shingo Tagami, Jun Matsui, Maya Takechi, and Masanobu Yahiro	
New measurement of the elemental fragmentation cross sections of 218 MeV/nucleon ${}^{28}\text{Si}$ on a carbon target (11 pages)	024609
Guang-Shuai Li, Jun Su, Bao-Hua Sun, Satoru Terashima, Jian-Wei Zhao, Xiao-Dong Xu, Ji-Chao Zhang, Ge Guo, Liu-Chun He, Wei-Ping Lin, Wen-Jian Lin, Chuan-Ye Liu, Chen-Gui Lu, Bo Mei, Zhi-Yu Sun, Isao Tanihata, Meng Wang, Feng Wang, Shi-Tao Wang, Xiu-Lin Wei, Jing Wang, Jun-Yao Xu, Jin-Rong Liu, Mei-Xue Zhang, Yong Zheng, Li-Hua Zhu, and Xue-Heng Zhang	
Particle-number fluctuations near the critical point of nuclear matter (21 pages)	024610
A. G. Magner, S. N. Fedotkin, and U. V. Grygoriev	
Theoretical calculations for the capture cross section of the formation of heavy and superheavy nuclei (9 pages)	024611
Guang Jin Li (黎广金) and Xiao Jun Bao (包小军)	
Apparent temperatures of neutron-poor and neutron-rich compound nuclei (11 pages)	024612
A. B. McIntosh, K. Hagel, L. A. McIntosh, R. Wada, J. Gauthier, P. J. Cammarata, A. Keeler, A. Abbott, A. Hannaman, B. Harvey, A. Jedelev, Y. W. Lui, L. W. May, M. Sorensen, M. Youngs, A. Zarrella, and S. J. Yennello	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW C

THIRD SERIES, VOLUME 107, NUMBER 2

FEBRUARY 2023

Secondary particle predictions in quasifree proton scattering reactions in the 100–250 MeV energy range (12 pages)	024613
E. Cupertino Gomes, U. B. Rodríguez, M. Gonçalves, A. R. C. Pinheiro, B. M. Santos, C. R. R. Souza, L. R. Hirsch, and S. B. Duarte	
α and 2α decay of nuclei in the region $94 \leq Z \leq 101$ using the modified generalized liquid drop model (10 pages)	024614
Megha Chandran and K. P. Santhosh	
Clustering effects in ^{36}Ar nuclei produced via the $^{24}\text{Mg} + ^{12}\text{C}$ reaction (9 pages)	024615
A. Di Nitto, E. Vardaci, F. Davide, G. La Rana, M. Ashaduzzaman, D. Mercogliano, P. A. Setaro, T. Banerjee, A. Vanzanella, D. Bianco, M. Cinausero, N. Gelli, F. Loffredo, and M. Quarto	
Analysis of nucleon-nucleus scattering data using a density-dependent semi-microscopic optical model with channel coupling (30 pages)	024616
S. B. Masadeh, D. A. Abdallah, and M. I. Jaghoub	
Electron and neutrino scattering off the deuteron in a relativistic framework (30 pages)	024617
A. Grassi, J. Golak, W. N. Polyzou, R. Skibiński, H. Witała, and H. Kamada	
Enhancement of incoherent bremsstrahlung in proton-nucleus scattering in the Δ -resonance energy region (16 pages)	024618
Sergei P. Maydanyuk	
Relativistic Nuclear Collisions	
Pion, kaon, and (anti)proton production in U+U collisions at $\sqrt{s_{NN}} = 193$ GeV measured with the STAR detector (17 pages)	024901
M. S. Abdallah <i>et al.</i> (STAR Collaboration)	
Multiplicity fluctuations and correlations in 5.02 TeV $p + \text{Pb}$ collisions at zero impact parameter (14 pages)	024902
Mathis Pepin, Peter Christiansen, Stéphane Munier, and Jean-Yves Ollitrault	
Light-nuclei production in heavy-ion collisions within a thermodynamical approach (12 pages)	024903
M. Kozhevnikova and Yu. B. Ivanov	
Nonlinear Regge trajectories and saturation of the Hagedorn spectrum (8 pages)	024904
István Szanyi, Tamás Biró, László Jenkovszky, and Vladyslav Libov	
Characterizing initial- and final-state effects of relativistic nuclear collisions (21 pages)	024905
Niseem Magdy	
Production and enhancement of (multi-) strange hadrons in Au + Au collisions at $\sqrt{s_{NN}} = 200$ GeV RHIC energy and Pb + Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV LHC energy (18 pages)	024906
Arpit Singh, P. K. Srivastava, Gauri Devi, and B. K. Singh	
Measurements of second-harmonic Fourier coefficients from azimuthal anisotropies in $p + p$, $p + \text{Au}$, $d + \text{Au}$, and $^3\text{He} + \text{Au}$ collisions at $\sqrt{s_{NN}} = 200$ GeV (12 pages)	024907
N. J. Abdulameer <i>et al.</i> (PHENIX Collaboration)	
 Higher-order cumulants and correlation functions of proton multiplicity distributions in $\sqrt{s_{NN}} = 3$ GeV Au+Au collisions at the RHIC STAR experiment (23 pages)	024908
M. S. Abdallah <i>et al.</i> (The STAR Collaboration)	
Collision centrality and energy dependence of strange hadron production in Au + Au collisions at $\sqrt{s_{NN}} = 7.7\text{--}54.4$ GeV (21 pages)	024909
Yan-ting Feng, Zi-yao Song, Feng-lan Shao, and Jun Song	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW C

THIRD SERIES, VOLUME 107, NUMBER 2

FEBRUARY 2023

Cumulants of conserved charges in hydrodynamic simulations (<i>10 pages</i>)	024910
Renan Hirayama, Frédérique Grassi, Willian Mاتيoli Serenone, and Jean-Yves Ollitrault	
Jet fragmentation via azimuthal angular correlations of electrons from heavy flavor decay in pp , p -Pb, and Pb-Pb collisions using PYTHIA8+Angantyr calculations (<i>8 pages</i>)	024911
Ravindra Singh, Yoshini Bailung, Sumit Kumar Kundu, and Ankhi Roy	
Azimuthal anisotropy measurement of (multi)strange hadrons in Au+Au collisions at $\sqrt{s_{NN}} = 54.4$ GeV (<i>14 pages</i>)	024912
M. S. Abdallah <i>et al.</i> (STAR Collaboration)	
Phase transition amplification of proton number fluctuations in nuclear collisions from a transport model approach (<i>8 pages</i>)	024913
Oleh Savchuk, Roman V. Poberezhnyuk, Anton Motornenko, Jan Steinheimer, Mark I. Gorenstein, and Volodymyr Vovchenko	
☞ Low- p_T direct-photon production in Au + Au collisions at $\sqrt{s_{NN}} = 39$ and 62.4 GeV (<i>17 pages</i>)	024914
N. J. Abdulameer <i>et al.</i> (PHENIX Collaboration)	
Cross effects in spin hydrodynamics: Entropy analysis and statistical operator (<i>7 pages</i>)	024915
Jin Hu	
Bremsstrahlung photons from a hadronizing quark-gluon plasma (<i>6 pages</i>)	024916
Taesoo Song	
Hadronic Physics and QCD	
Nucleons and Δ isobars under strong magnetic fields in Skyrme models (<i>9 pages</i>)	025201
YanJun Chen and Wei Jiang	
Theoretical study of the $\gamma d \rightarrow \pi^0 \eta d$ reaction (<i>24 pages</i>)	025202
A. Martínez Torres, K. P. Khemchandani, and E. Oset	
The $\pi^- p \rightarrow a_0^- \eta p$ reaction in an effective Lagrangian model (<i>9 pages</i>)	025203
Ke Wang and Bo-Chao Liu	
Minimal entanglement and emergent symmetries in low-energy QCD (<i>17 pages</i>)	025204
Qiaofeng Liu, Ian Low, and Thomas Mehen	
Quark orbital angular momentum of ground-state octet baryons (<i>8 pages</i>)	025205
Jing-Feng Li, Cheng Chen, Gang Li, Chun-Sheng An, Cheng-Rong Deng, and Ju-Jun Xie	
Jet fragmentation via azimuthal angular correlations of heavy flavors in pp collisions at $\sqrt{s} = 7$ TeV (<i>9 pages</i>)	025206
Ravindra Singh, Swapnesh Khade, and Ankhi Roy	
Spectral function of the η' meson in nuclear medium based on phenomenological models (<i>15 pages</i>)	025207
Shuntaro Sakai and Daisuke Jido	
Effective spectral function of vector mesons via lifetime analysis (<i>9 pages</i>)	025208
Renan Hirayama, Jan Staudenmaier, and Hannah Elfner	
Parametrization of the nuclear structure function (<i>7 pages</i>)	025209
G. R. Boroun and B. Rezaei	
Electroweak Interaction, Symmetries	
Exchange correction for allowed β decay (<i>12 pages</i>)	025501
O. Nițescu, S. Stoica, and F. Šimkovic	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW C

THIRD SERIES, VOLUME 107, NUMBER 2

FEBRUARY 2023

Single-pion production in electron-proton interactions (14 pages)	025502
M. Kabirnezhad	
New measurement of double- β decays of ^{100}Mo to excited states of ^{100}Ru with the CUPID-Mo experiment (20 pages)	025503
C. Augier <i>et al.</i> (CUPID-Mo Collaboration)	
Nuclear Astrophysics	
Investigating signatures of phase transitions in neutron-star cores (7 pages)	025801
R. Somasundaram, I. Tews, and J. Margueron	
Reaching percolation and conformal limits in neutron stars (5 pages)	025802
Michał Marzecenko, Larry McLerran, Krzysztof Redlich, and Chihiro Sasaki	
Cross section measurement of the $^{144}\text{Sm}(\alpha, n)^{147}\text{Gd}$ reaction for studying the α -nucleus optical potential at astrophysical energies (11 pages)	025803
Gy. Gyürky, P. Mohr, A. Angyal, Z. Halász, G. G. Kiss, Zs. Mátyus, T. N. Szegedi, T. Szücs, and Zs. Fülöp	
Equation of state of superfluid neutron matter with low-momentum interactions (10 pages)	025804
Viswanathan Palaniappan, S. Ramanan, and Michael Urban	
$^{10}\text{B} + \alpha$ reactions at low energies (13 pages)	025805
A. Gula, R. J. deBoer, S. Aguilar, J. Arroyo, C. Boomershine, B. Frentz, J. Görres, S. Henderson, R. Kelmar, S. McGuinness, K. V. Manukyan, S. Moylan, D. Robertson, C. Seymour, Shahina, E. Stech, W. Tan, J. Wilkinson, and M. Wiescher	
Compactness in the thermal evolution of twin stars (9 pages)	025806
F. Lyra, L. Moreira, R. Negreiros, R. O. Gomes, and V. Dexheimer	

ERRATA

Erratum: High-resolution, accurate multiple-reflection time-of-flight mass spectrometry for short-lived, exotic nuclei of a few events in their ground and low-lying isomeric states [Phys. Rev. C 99 , 064313 (2019)] (1 page) . . .	029901(E)
Samuel Ayet San Andrés, Christine Hornung, Jens Ebert, Wolfgang R. Plaß, Timo Dickel, Hans Geissel, Christoph Scheidenberger, Julian Bergmann, Florian Greiner, Emma Haettner, Christian Jesch, Wayne Lippert, Israel Mardor, Ivan Miskun, Zygmunt Patyk, Stephane Pietri, Alexander Pihktelev, Sivaji Purushothaman, Moritz P. Reiter, Ann-Kathrin Rink, Helmut Weick, Mikhail I. Yavor, Soumya Bagchi, Volha Charviakova, Paul Constantin, Marcel Diwisch, Andrew Finlay, Satbir Kaur, Ronja Knöbel, Johannes Lang, Bo Mei, Iain D. Moore, Jan-Hendrik Otto, Ilkka Pohjalainen, Andrej Prochazka, Christophe Rappold, Maya Takechi, Yoshiki K. Tanaka, John S. Winfield, and Xiaodong Xu	
Erratum: Level structure of ^{141}Ba and ^{139}Xe and the level systematics of $N = 85$ even-odd isotones [Phys. Rev. C 66 , 014305 (2002)] (5 pages)	029902(E)
Y. X. Luo, E. H. Wang, J. O. Rasmussen, J. H. Hamilton, A. V. Ramayya, J. K. Hwang, C. J. Beyer, S. J. Zhu, J. Kormicki, X. Q. Zhang, E. F. Jones, P. M. Gore, T. N. Ginter, K. E. Gregorich, I-Yang. Lee, A. Macchiavelli, P. Zielinski, C. M. Folden III, P. Fallon, G. M. Ter-Akopian, Yu. Ts. Oganessian, A. V. Daniel, M. A. Stoyer, J. D. Cole, R. Donangelo, S. C. Wu, and S. Asztalos	
Erratum: Toward an accurate strongly coupled many-body theory within the equation-of-motion framework [Phys. Rev. C 100 , 064320 (2019)] (1 page)	029903(E)
Elena Litvinova and Peter Schuck	