PHYSICAL REVIEW C

For editorial and subscription correspondence, please see inside front cover
(ISSN: 0556-2813)

PERIODICALS
Postmaster send address changes to:
American Institute of Physics
Suite 1NO1
2 Huntington Quadrangle
Melville, NY 11747-4502

THIRD SERIES, VOLUME 63, NUMBER 3 *CONTENTS* **MARCH 2001**

RAPID COMMUNICATIONS

Isoscalar giant dipole resonance in ^{90}Zr, ^{116}Sn, and ^{208}Pb *(5 pages)* . . . . . 031301(R)
H. L. Clark, Y.-W. Lui, and D. H. Youngblood

Testing binomial reducibility and thermal scaling in hadron-induced multifragmentation *(5 pages)* . . . . . 031302(R)
L. Beaulieu, T. Lefort, K. Kwiatkowski, W.-c. Hsi, L. Pienkowski, R. G. Korteling, R. Laforest, E. Martin, E. Ramakrishnan, D. Rowland, A. Ruangma, V. E. Viola, E. Winchester, and S. J. Yennello

Observation of the $N=Z=44$ ^{88}Ru nucleus *(5 pages)* . . . . . 031303(R)
N. Mărginean, C. Rossi Alvarez, D. Bucurescu, C. A. Ur, A. Gadea, S. Lunardi, D. Bazzacco, G. de Angelis, M. Axiotis, M. De Poli, E. Farnea, M. Ionescu-Bujor, A. Iordăchescu, S. M. Lenzi, Th. Kröll, T. Martinez, R. Menegazzo, D. R. Napoli, G. Nardelli, P. Pavan, B. Quintana, and P. Spolaore

New strongly deformed proton emitter: ^{117}La *(4 pages)* . . . . . 031304(R)
F. Soramel, A. Guglielmetti, L. Stroe, L. Müller, R. Bonetti, G. L. Poli, F. Malerba, E. Bianchi, A. Andrighetto, J. Y. Guo, Z. C. Li, E. Maglione, F. Scarlassara, C. Signorini, Z. H. Liu, M. Ruan, M. Ivaşcu, C. Broude, P. Bednarczyk, and L. S. Ferreira

Airy-like patterns in heavy ion elastic scattering *(5 pages)* . . . . . 031601(R)
R. Anni

Inclusive particle spectra at (56 and 130)*A* GeV *(4 pages)* . . . . . 031901(R)
D. E. Kahana and S. H. Kahana

Unblocking of the Gamow-Teller strength in stellar electron capture on neutron-rich germanium isotopes *(5 pages)* . . . . . 032801(R)
K. Langanke, E. Kolbe, and D. J. Dean

ARTICLES

Nucleon-Nucleon Interaction, Few-Body Systems

Nucleon-nucleon scattering in a chiral constituent quark model *(10 pages)* 034001
D. Bartz and Fl. Stancu

Point-form analysis of elastic deuteron form factors *(13 pages)* 034002
T. W. Allen, W. H. Klink, and W. N. Polyzou

$\pi\Lambda\Sigma$ coupling extracted from hyperonic atoms *(9 pages)* 034003
B. Loiseau and S. Wycech

Practical approximation scheme for the pion dynamics in the three-nucleon system *(10 pages)* 034004
L. Canton, T. Melde, and J. P. Svenne

Charge symmetry breaking of the nucleon-nucleon interaction: ρ-ω mixing versus nucleon mass splitting *(10 pages)* 034005
R. Machleidt and H. Müther

Copyright 2001 by The American Physical Society

(Continued)

0556-2813(200103)63:3;1-S

PHYSICAL REVIEW C THIRD SERIES, VOLUME 63, NUMBER 3 MARCH 2001

Extraction of electromagnetic neutron form factors through inclusive and exclusive polarized electron scattering on a polarized ^{3}He target *(10 pages)* 034006
J. Golak, G. Ziemer, H. Kamada, H. Witała, and W. Glöckle

α-nucleus optical potential in the double-folding model *(15 pages)* 034007
Dao T. Khoa

Nuclear Structure

Helium breakup states in ^{10}Be and ^{12}Be *(9 pages)* 034301
M. Freer, J. C. Angélique, L. Axelsson, B. Benoit, U. Bergmann, W. N. Catford, S. P. G. Chappell, N. M. Clarke, N. Curtis, A. D'Arrigo, E. de Góes Brennard, O. Dorvaux, B. R. Fulton, G. Giardina, C. Gregori, S. Grévy, F. Hanappe, G. Kelly, M. Labiche, C. Le Brun, S. Leenhardt, M. Lewitowicz, K. Markenroth, F. M. Marqués, J. T. Murgatroyd, T. Nilsson, A. Ninane, N. A. Orr, I. Piqueras, M. G. Saint Laurent, S. M. Singer, O. Sorlin, L. Stuttgé, and D. L. Watson

Investigation of the $K^{\pi}=8^{-}$ isomer in ^{132}Ce *(6 pages)* 034302
T. Morek, J. Srebrny, Ch. Droste, M. Kowalczyk, T. Rząca-Urban, K. Starosta, W. Urban, R. Kaczarowski, E. Ruchowska, M. Kisieliński, A. Kordyasz, J. Kownacki, M. Palacz, E. Wesołowski, W. Gast, R. M. Lieder, P. Bednarczyk, W. Męczyński, and J. Styczeń

β-delayed particle decay of ^{9}C and the $A=9$, $T=1/2$ nuclear system: R-matrix fits, the $A=9$ nuclear system, and the stellar reaction rate of ^{4}He$(\alpha n,\gamma)^{9}$Be *(16 pages)* 034303
L. Buchmann, E. Gete, J. C. Chow, J. D. King, and D. F. Measday

Random phase approximation for odd nuclei and its application to the description of the electric dipole modes in ^{17}O *(13 pages)* 034304
S. P. Kamerdzhiev, R. J. Liotta, and V. I. Tselyaev

Relativistic Hartree-Bogoliubov description of sizes and shapes of $A=20$ isobars *(5 pages)* 034305
G. A. Lalazissis, D. Vretenar, and P. Ring

Problem of ''deformed'' superheavy nuclei *(12 pages)* 034306
A. Sobiczewski, I. Muntian, and Z. Patyk

Breakup measurements of particle unbound states in ^{10}B *(5 pages)* 034307
P. J. Leask, M. Freer, N. M. Clarke, B. R. Fulton, C. D. Freeman, S. M. Singer, W. N. Catford, N. Curtis, K. L. Jones, R. L. Cowin, D. L. Watson, R. P. Ward, N. A. Orr, and V. F. E. Pucknell

$E2$ transitions and quadrupole moments in the E(5) symmetry *(5 pages)* 034308
J. M. Arias

Nonaxial octupole deformations in light $N=Z$ nuclei at high spins *(11 pages)* 034309
Takeshi Tanaka, Rashid G. Nazmitdinov, and Kazuo Iwasawa

Low energy dipole strength in light drip line nuclei *(8 pages)* 034310
H. Sagawa, Toshio Suzuki, H. Iwasaki, and M. Ishihara

Angular correlations from the ^{12}C+^{16}O breakup of ^{28}Si and ^{12}C+^{12}C breakup of ^{24}Mg *(8 pages)* 034311
M. Shawcross, N. Curtis, W. N. Catford, N. M. Clarke, B. R. Fulton, S. J. Hall, J. T. Murgatroyd, S. P. G. Chappell, R. L. Cowin, G. Dillon, and D. L. Watson

g factors of the first 2^{+} states in the transitional ^{92,94,96,98,100}Mo isotopes and the onset of collectivity *(13 pages)* 034312
P. F. Mantica, A. E. Stuchbery, D. E. Groh, J. I. Prisciandaro, and M. P. Robinson

Faddeev description of two-hole–one-particle motion and the single-particle spectral function *(12 pages)* 034313
C. Barbieri and W. H. Dickhoff

Mass measurements of ^{70}Se, ^{71}Se, ^{72}Br, and ^{73}Br *(7 pages)* 034314
B. E. Tomlin, C. J. Barton, N. V. Zamfir, M. A. Caprio, R. L. Gill, R. Krücken, J. R. Novak, J. R. Cooper, K. E. Zyromski, G. Cata-Danil, C. W. Beausang, A. Wolf, N. A. Pietralla, H. Newman, J. Cederkall, Benyuan Liu, Z. Wang, R. F. Casten, and D. S. Brenner

(Continued)

PHYSICAL REVIEW C **THIRD SERIES, VOLUME 63, NUMBER 3** **MARCH 2001**

Evidence for a highly deformed band in $^{12}C+^{16}O$ breakup of ^{28}Si *(8 pages)* 034315
N. I. Ashwood, J. T. Murgatroyd, N. M. Clarke, M. Freer, B. R. Fulton, A. St. J. Murphy, S. P. G. Chappell, R. L. Cowin, G. K. Dillon, D. L. Watson, W. N. Catford, N. Curtis, M. Shawcross, and V. Pucknell

First decay study of the very neutron-rich isotope ^{93}Br *(6 pages)* 034316
G. Lhersonneau, A. Wöhr, B. Pfeiffer, K.-L. Kratz, and the ISOLDE Collaboration

$^{12}C+^{12}C$ and $^{16}O+^{8}Be$ decay of ^{24}Mg states populated in the $^{12}C(^{20}Ne,^{24}Mg^*)^{8}Be$ reaction *(8 pages)* 034317
M. Freer, J. T. Murgatroyd, S. M. Singer, N. Curtis, D. J. Henderson, D. J. Hofman, and A. H. Wuosmaa

Isospin dependence of the nuclear surface tension *(5 pages)* 034318
W. D. Myers and W. J. Świątecki

Complex Langevin equation and the many-fermion problem *(10 pages)* 034319
Chris Adami and Steven E. Koonin

$T=0$ and $T=1$ pairing and the formation of four-particle correlated structures in the ground states of $Z=N$ nuclei *(7 pages)* 034320
Yu. V. Palchikov, J. Dobeš, and R. V. Jolos

Recoil isomer tagging in the proton-rich odd-odd $N=77$ isotones, $^{142}_{65}Tb$ and $^{144}_{67}Ho$ *(9 pages)* 034321
C. Scholey, D. M. Cullen, E. S. Paul, A. J. Boston, P. A. Butler, T. Enqvist, C. Fox, H. C. Scraggs, S. L. Shepherd, O. Stezowski, A. M. Bruce, P. M. Walker, M. Caamaño, J. Garcés Narro, M. A. Bentley, D. T. Joss, O. Dorvaux, P. T. Greenlees, K. Helariutta, P. M. Jones, R. Julin, S. Juutinen, H. Kankaanpää, H. Kettunen, P. Kuusiniemi, M. Leino, M. Muikku, P. Nieminen, P. Rahkila, and J. Uusitalo

Splitting of the dipole and spin-dipole resonances *(5 pages)* 034322
Sam M. Austin, E. Adamides, A. Galonsky, T. Nees, W. A. Sterrenburg, D. E. Bainum, J. Rapaport, E. Sugarbaker, C. C. Foster, C. D. Goodman, D. J. Horen, C. A. Goulding, and M. B. Greenfield

Gamow-Teller transitions at finite temperatures in the extended quasiparticle random phase approximation *(6 pages)* 034323
O. Civitarese and M. Reboiro

Nuclear Reactions

Effect of the preequilibrium process upon fast neutron fission spectra from ^{238}U *(8 pages)* 034601
T. Kawano, T. Ohsawa, M. Baba, and T. Nakagawa

Induced θ-vacuum states in heavy ion collisions: A possible signature *(9 pages)* 034602
Kirk Buckley, Todd Fugleberg, and Ariel Zhitnitsky

Fine structure of α decay in odd nuclei *(5 pages)* 034603
M. Mirea

Noncentral interactions in inelastic scattering of nucleons on nuclei: The case of $^{12}C(p,p')^{12}C^*(1^+)$ *(10 pages)* 034604
G. Ramachandran, M. S. Vidya, and A. Sudha Rao

Medium corrections in the formation of light charged particles in heavy ion reactions *(7 pages)* 034605
C. Kuhrts, M. Beyer, P. Danielewicz, and G. Röpke

Algebraic model for scattering in three-s-cluster systems. I. Theoretical background *(16 pages)* 034606
V. Vasilevsky, A. V. Nesterov, F. Arickx, and J. Broeckhove

Algebraic model for scattering in three-s-cluster systems. II. Resonances in the three-cluster continuum of ^{6}He and ^{6}Be *(7 pages)* 034607
V. Vasilevsky, A. V. Nesterov, F. Arickx, and J. Broeckhove

Rare isotope production in statistical multifragmentation *(10 pages)* 034608
Scott Pratt, Wolfgang Bauer, Christopher Morling, and Patrick Underhill

Unfactorized versus factorized calculations for $^{2}H(e,e'p)$ reactions at GeV energies *(7 pages)* 034609
Sabine Jeschonnek

(Continued)

PHYSICAL REVIEW C THIRD SERIES, VOLUME 63, NUMBER 3 MARCH 2001

Measurement and analysis of neutron spectra from a thick Ta target bombarded by 7.2*A* MeV ^{16}O ions *(6 pages)* 034610
Maitreyee Nandy, Tapas Bandyopadhyay, and P. K. Sarkar

Observation of a double giant dipole resonance in fusion-evaporation reactions *(5 pages)* 034611
G. Viesti, V. Rizzi, M. Cinausero, N. Gelli, A. Gadea, D. Bazzacco, A. Algora-Pineda, D. Appelbee, G. de Angelis, N. Belcari, M. De Poli, T. E. Drake, D. Fabris, E. Farnea, E. Fioretto, A. Galindo-Uribarri, W. Krolas, T. Kroll, F. Lucarelli, S. Lunardi, M. Lunardon, T. Martinez, R. Menegazzo, B. K. Nayak, G. Nebbia, D. R. Napoli, B. Nyako, C. Petrache, Z. Podolyak, G. Prete, C. Rossi Alvarez, P. Spolaore, C. Ur, and K. Zuber

Properties of light particles produced in Ar+Ni collisions at 95*A* MeV: Prompt emission and evaporation *(10 pages)* 034612
D. Doré, C. Volant, J. Cugnon, R. Legrain, G. Auger, Ch. O. Bacri, N. Bellaize, B. Borderie, R. Bougault, B. Bouriquet, R. Brou, P. Buchet, J. L. Charvet, A. Chbihi, J. Colin, D. Cussol, R. Dayras, A. Demeyer, D. Durand, J. D. Frankland, E. Galichet, E. Genouin-Duhamel, E. Gerlic, D. Guinet, B. Guiot, S. Hudan, P. Lautesse, F. Lavaud, J. L. Laville, J. F. Lecolley, C. Leduc, N. Le Neindre, O. Lopez, M. Louvel, A. M. Maskay, L. Nalpas, J. Normand, P. Pawłowski, M. Pârlog, E. Plagnol, M. F. Rivet, E. Rosato, F. Saint-Laurent, J. C. Steckmeyer, G. Tăbăcaru, B. Tamain, L. Tassan-Got, E. Vient, and J. P. Wieleczko (INDRA Collaboration)

Excitation of the isovector giant monopole resonances via the ^{nat}Pb(^{3}He,tp) reaction *(11 pages)* 034613
R. G. T. Zegers, A. M. van den Berg, S. Brandenburg, M. Fujiwara, J. Guillot, M. N. Harakeh, H. Laurent, S. Y. van der Werf, A. Willis, and H. W. Wilschut

Measurements of the spin observables $D_{NN'}$, P, and A_y in inelastic proton scattering from ^{12}C and ^{16}O at 198 MeV *(16 pages)* 034614
A. K. Opper, S. W. Wissink, A. D. Bacher, J. Lisantti, C. Olmer, R. Sawafta, E. J. Stephenson, and S. P. Wells

Incident-energy dependence of the fragmentation mechanism reflecting the cluster structure of the ^{19}B nucleus *(11 pages)* 034615
Hiroki Takemoto, Hisashi Horiuchi, and Akira Ono

Thermal excitation and decay of nuclei from antiproton-nucleus interactions at 1.22 GeV *(23 pages)* 034616
B. Lott, F. Goldenbaum, A. Böhm, W. Bohne, T. von Egidy, P. Figuera, J. Galin, D. Hilscher, U. Jahnke, J. Jastrzebski, M. Morjean, G. Pausch, A. Péghaire, L. Pienkowski, D. Polster, S. Proschitzki, B. Quednau, H. Rossner, S. Schmid, and W. Schmid

Neutrino reactions on the deuteron *(18 pages)* 034617
S. Nakamura, T. Sato, V. Gudkov, and K. Kubodera

Elastic proton scattering from ^{4}He at 297 MeV *(11 pages)* 034618
M. Yoshimura, M. Nakamura, H. Akimune, I. Daito, T. Inomata, M. Itoh, M. Kawabata, T. Noro, H. Sakaguchi, H. Takeda, A. Tamii, K. Yonehara, H. P. Yoshida, and M. Yosoi

Midrapidity charge distribution in peripheral heavy ion collisions *(13 pages)* 034619
Klaus Morawetz, Pavel Lipavský, Jacques Normand, Daniel Cussol, Jean Colin, and Bernard Tamain

Airy structure in ^{16}O+^{16}O elastic scattering between 5 and 10 MeV/nucleon *(17 pages)* 034620
F. Michel, G. Reidemeister, and S. Ohkubo

Relativistic Nuclear Collisions

J/ψ absorption by π and ρ mesons in a meson exchange model with anomalous parity interactions *(11 pages)* 034901
Yongseok Oh, Taesoo Song, and Su Houng Lee

Transverse momentum dependence of directed particle flow at 160*A* GeV *(7 pages)* 034902
E. E. Zabrodin, C. Fuchs, L. V. Bravina, and Amand Faessler

(Continued)

PHYSICAL REVIEW C THIRD SERIES, VOLUME 63, NUMBER 3 MARCH 2001

Effects of meson mixing on dilepton spectra *(8 pages)* 034903
O. Teodorescu, A. K. Dutt-Mazumder, and C. Gale

Hadronic Physics and QCD

Analysis of hadron-nucleus interactions in the framework of two multistring models *(5 pages)* 035201
S. Dhamija, M. Kaur, and S. Dahiya

Fock exchange terms in nonlinear quantum hadrodynamics *(7 pages)* 035202
V. Greco, F. Matera, M. Colonna, M. Di Toro, and G. Fabbri

Broadening of transverse momentum of partons propagating through a medium *(10 pages)* 035203
M. B. Johnson, B. Z. Kopeliovich, and A. V. Tarasov

Long- and medium-range components of the nuclear force in quark-model based calculations *(8 pages)* 035204
D. Hadjimichef, J. Haidenbauer, and G. Krein

η' photoproduction near threshold *(6 pages)* 035205
Qiang Zhao

H-dibaryon search via Ξ^- capture on the deuteron *(7 pages)* 035206
F. Merrill, T. Iijima, P. Koran, P. D. Barnes, B. Bassalleck, A. R. Berdoz, T. Bürger, M. Burger, R. E. Chrien, C. A. Davis, G. E. Diebold, H. En'yo, H. Fischer, G. B. Franklin, J. Franz, L. Gan, D. R. Gill, K. Imai, Y. Kondo, M. Landry, L. Lee, J. Lowe, R. Magahiz, A. Masaike, R. McCrady, C. A. Meyer, J. M. Nelson, K. Okada, S. A. Page, K. Paschke, P. H. Pile, B. P. Quinn, W. D. Ramsay, E. Rössle, A. Rusek, R. Sawafta, H. Schmitt, R. A. Schumacher, R. L. Stearns, R. W. Stotzer, I. R. Sukaton, V. Sum, R. Sutter, J. J. Szymanski, F. Takeutchi, W. T. H. van Oers, K. Yamamoto, V. J. Zeps, and R. Zybert (The BNL E813 Collaboration)

Baryon spectrum in the chiral constituent quark model *(5 pages)* 035207
H. Garcilazo, A. Valcarce, and F. Fernández

Quark-antiquark bound states in the relativistic spectator formalism *(16 pages)* 035208
Çetin Şavklı and Franz Gross

Electroweak Interaction, Symmetries

Neutrino-deuteron scattering in effective field theory at next-to-next-to-leading order *(17 pages)* 035501
Malcolm Butler, Jiunn-Wei Chen, and Xinwei Kong

Nuclear Astrophysics

Coulomb breakup of ^{7}Li for nuclear astrophysics *(20 pages)* 035801
Y. Tokimoto, H. Utsunomiya, T. Yamagata, M. Ohta, Y.-W. Lui, R. P. Schmitt, S. Typel, Y. Aoki, K. Ieki, and K. Katori

Antikaon condensation and the metastability of protoneutron stars *(13 pages)* 035802
Sarmistha Banik and Debades Bandyopadhyay

Measurement of the ^{24}Mg$(p,t)^{22}$Mg reaction and implications for the ^{21}Na$(p,\gamma)^{22}$Mg stellar reaction rate *(13 pages)* 035803
N. Bateman, K. Abe, G. Ball, L. Buchmann, J. Chow, J. M. D'Auria, Y. Fuchi, C. Iliadis, H. Ishiyama, K. P. Jackson, S. Karataglidis, S. Kato, S. Kubono, K. Kumagai, M. Kurokawa, X. Liu, S. Michimasa, P. Strasser, and M. H. Tanaka

BRIEF REPORTS

Magnetic moments of mirror nuclei *(4 pages)* 037301
B. Buck, A. C. Merchant, and S. M. Perez

(Continued)

PHYSICAL REVIEW C **THIRD SERIES, VOLUME 63, NUMBER 3** **MARCH 2001**

Observation of a new transition in the β-delayed neutron decay of ^{16}C *(4 pages)* 037302
S. Grévy, N. L. Achouri, J. C. Angélique, C. Borcea, A. Buta, F. De Oliveira, M. Lewitowicz, E. Liénard, T. Martin, F. Negoita, N. A. Orr, J. Peter, S. Pietri, and C. Timis

Mass dependence of single-particle energies for *sd* shell-model calculations *(4 pages)* 037303
J. O. Fiase

Nuclear pairing in the $T=0$ channel reexamined *(4 pages)* 037304
E. Garrido, P. Sarriguren, E. Moya de Guerra, U. Lombardo, P. Schuck, and H. J. Schulze

Deuteron elastic and inelastic scattering from ^{12}C, ^{24}Mg, and ^{58}Ni at 170 MeV *(4 pages)* 037601
C. Bäumer, R. Bassini, A. M. van den Berg, D. De Frenne, D. Frekers, M. Hagemann, V. M. Hannen, M. N. Harakeh, J. Heyse, M. A. de Huu, E. Jacobs, M. Mielke, S. Rakers, R. Schmidt, H. Sohlbach, and H. J. Wörtche

Nuclear multifragmentation as a branching cascade *(4 pages)* 037602
Alexander Bershadskii

Electron-capture delayed fission probabilities of ^{248}Es and ^{246}Es *(4 pages)* 037603
D. A. Shaughnessy, K. E. Gregorich, M. R. Lane, C. A. Laue, D. M. Lee, C. A. McGrath, D. A. Strellis, E. R. Sylwester, P. A. Wilk, and D. C. Hoffman

Azimuthal asymmetry in transverse energy flow in nuclear collisions at high energies *(3 pages)* 037901
Andrei Leonidov and Dmitry Ostrovsky

Size shrinking of deuterons in very dilute superfluid nuclear matter *(2 pages)* 038201
U. Lombardo and P. Schuck

Selected Abstracts from Other Physical Review Journals i

Cumulative Author Index iv