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
500 Sunnyside Boulevard
Woodbury, NY 11797-2999

THIRD SERIES, VOLUME 57, NUMBER 3 *CONTENTS* MARCH 1998

RAPID COMMUNICATIONS

Lifetime measurements of yrast and excited superdeformed bands in ^{192,193}Hg R1017
B. C. Busse, P. Fallon, R. Krücken, D. Ackermann, I. Ahmad, S. J. Asztalos, D. J. Blumenthal, M. P. Carpenter, R. M. Clark, M. A. Deleplanque, R. M. Diamond, S. M. Fischer, F. Hannachi, R. V. F. Janssens, T. L. Khoo, A. Korichi, T. Lauritsen, I. Y. Lee, A. Lopez-Martens, A. O. Macchiavelli, R. W. MacLeod, E. F. Moore, D. Nisius, G. Schmid, D. Seweryniak, F. S. Stephens, and K. Vetter

Octupole correlations at low spin in $^{108}_{52}$Te$_{56}$ R1022
G. J. Lane, D. B. Fossan, J. M. Sears, J. F. Smith, J. A. Cameron, R. M. Clark, I. M. Hibbert, V. P. Janzen, R. Krücken, I.-Y. Lee, A. O. Macchiavelli, C. M. Parry, and R. Wadsworth

Symmetrization of emitter size in violent ''light'' heavy ion collisions at intermediate energy R1027
Y. Larochelle, L. Gingras, L. Beaulieu, R. Laforest, R. Roy, M. Samri, and C. St-Pierre

Splintering central collisions: Systematics of momentum and energy deposition for (17–115)A MeV ^{40}Ar R1032
E. Colin, Rulin Sun, N. N. Ajitanand, John M. Alexander, M. A. Barton, P. A. DeYoung, A. Elmaani, C. J. Gelderloos, E. E. Gualtieri, D. Guinet, S. Hannuschke, J. A. Jasma, L. Kowalski, Roy A. Lacey, J. Lauret, E. Norbeck, R. Pak, G. F. Peaslee, M. Stern, N. T. B. Stone, S. D. Sundbeck, A. M. Vander Molen, G. D. Westfall, and J. Yee

First observation of excited states in ^{118}Ba: Possible evidence for octupole correlations in neutron-deficient barium isotopes R1037
J. F. Smith, C. J. Chiara, D. B. Fossan, G. J. Lane, J. M. Sears, I. Thorslund, H. Amro, C. N. Davids, R. V. F. Janssens, D. Seweryniak, I. M. Hibbert, R. Wadsworth, I. Y. Lee, and A. O. Macchiavelli

Observation of the exotic nucleus ^{145}Tm via its direct proton decay R1042
J. C. Batchelder, C. R. Bingham, K. Rykaczewski, K. S. Toth, T. Davinson, J. A. McKenzie, P. J. Woods, T. N. Ginter, C. J. Gross, J. W. McConnell, E. F. Zganjar, J. H. Hamilton, W. B. Walters, C. Baktash, J. Greene, J. F. Mas, W. T. Milner, S. D. Paul, D. Shapira, X. J. Xu, and C. H. Yu

Barrier distributions for ^{16}O+^{152}Sm quasielastic and elastic scattering R1047
Huanqiao Zhang, Feng Yang, Chengjian Lin, Zuhua Liu, and Yueming Hu

Dynamics of radial collective energy in near central collisions for 1A GeV Au+C R1051
J. Lauret, S. Albergo, F. Bieser, N. N. Ajitanand, John M. Alexander, F. P. Brady, Z. Caccia, D. Cebra, A. D. Chacon, J. L. Chance, Y. Choi, P. Chung, S. Costa, P. Danielewicz, J. B. Elliott, M. Gilkes, J. A. Hauger, A. S. Hirsch, E. L. Hjort, A. Insolia, M. Justice, D. Keane, J. Kintner, Roy A. Lacey, V. Lindenstruth, M. A. Lisa, H. S. Matis, R. McGrath, M. McMahan, C. McParland, W. F. J. Müller, D. L. Olson, M. D. Partlan, N. T. Porile, R. Potenza, G. Rai, J. Rasmussen, H. G. Ritter, J. Romanski, J. L. Romero, G. V. Russo, H. Sann, R. Scharenberg, A. Scott, Y. Shao, B. K. Srivastava, T. J. M. Symons, M. Tincknell, C. Tuvè, S. Wang, P. Warren, T. Wienold, H. H. Wieman, and K. Wolf (EOS Collaboration)

High-spin properties of octupole bands in ^{240}Pu and ^{248}Cm R1056
G. Hackman, R. V. F. Janssens, T. L. Khoo, I. Ahmad, J. P. Greene, H. Amro, D. Ackermann, M. P. Carpenter, S. M. Fischer, T. Lauritsen, L. R. Morss, P. Reiter, D. Seweryniak, D. Cline, C. Y. Wu, E. F. Moore, and T. Nakatsukasa

Relativistic mean-field description of light Λ hypernuclei with large neutron excess R1060
D. Vretenar, W. Pöschl, G. A. Lalazissis, and P. Ring

Isoscalar and isovector dipole mode in drip line nuclei in comparison with β-stable nuclei R1064
I. Hamamoto, H. Sagawa, and X. Z. Zhang

(Continued)

0556-2813(199803)57:3;1-8

PHYSICAL REVIEW C **THIRD SERIES, VOLUME 57, NUMBER 3** **MARCH 1998**

Minimal relativity and $^3S_1$-$^3D_1$ pairing in symmetric nuclear matter R1069
Ø. Elgarøy, L. Engvik, M. Hjorth-Jensen, and E. Osnes
Semiclassical description of the shears mechanism and the role of effective interactions R1073
A. O. Macchiavelli, R. M. Clark, P. Fallon, M. A. Deleplanque, R. M. Diamond, R. Krücken, I. Y. Lee, F. S. Stephens, S. Asztalos, and K. Vetter

ARTICLES

Nucleon-Nucleon Interaction, Few-Body Systems

np scattering measurements at 162 MeV and the πNN coupling constant 1077
J. Rahm, J. Blomgren, H. Condé, S. Dangtip, K. Elmgren, N. Olsson, T. Rönnqvist, R. Zorro, A. Ringbom, G. Tibell, O. Jonsson, L. Nilsson, P.-U. Renberg, T. E. O. Ericson, and B. Loiseau
Elastic proton-deuteron backward scattering: Relativistic effects and polarization observables 1097
L. P. Kaptari, B. Kämpfer, S. M. Dorkin, and S. S. Semikh

Nuclear Structure

Nuclear structure of ^{241}Pu from neutron-capture, (d,p)-, and (d,t)-reaction measurements 1112
D. H. White, R. W. Hoff, H. G. Börner, K. Schreckenbach, F. Hoyler, G. Colvin, I. Ahmad, A. M. Friedman, and J. R. Erskine
Giant monopole resonance strength in ^{28}Si 1134
D. H. Youngblood, H. L. Clark, and Y.-W. Lui
Octupole deformation in ^{226}Th 1145
C. F. Liang, P. Paris, R. K. Sheline, D. Trubert, C. Le Naour, and M. Vergnes
Extended spectroscopy in the superdeformed well of ^{148,149}Gd nuclei 1151
Th. Byrski, O. Stezowski, K. Zuber, D. Appelbe, C. W. Beausang, F. A. Beck, A. Bouguettoucha, D. Curien, G. de France, G. Duchêne, S. Ertück, C. Finck, B. Gall, B. Haas, A. Z. Kiss, N. Khadiri, B. Kharraja, A. Nourreddine, D. Prévost, H. Savajols, M. Smith, P. J. Twin, and J. P. Vivien
New isomer in ^{80}Y 1159
J. Döring, H. Schatz, A. Aprahamian, R. C. de Haan, J. Görres, M. Wiescher, W. B. Walters, J. Rikovska, L. T. Brown, C. N. Davids, C. J. Lister, D. Seweryniak, and B. Foy
Pseudospin symmetry and relativistic single-nucleon wave functions 1167
Joseph N. Ginocchio and David G. Madland
Nucleon-nucleon phase shifts and pairing in neutron matter and nuclear matter 1174
Ø. Elgarøy and M. Hjorth-Jensen
Binding energy of double Λ hypernuclei in relativistic mean field theory 1178
S. Marcos, R. J. Lombard, and J. Mareš
Structure of ^{43}Sc in the $\alpha+{}^{39}$K cluster model 1184
Toshimi Sakuda and Shigeo Ohkubo
Diabatic and adiabatic collective motion in a model pairing system 1192
Takashi Nakatsukasa and Niels R. Walet
Finite rank approximation for random phase approximation calculations with Skyrme interactions: An application to Ar isotopes 1204
Nguyen Van Giai, Ch. Stoyanov, and V. V. Voronov
Pion excess, nuclear correlations, and the interpretation of $(\vec{p},\vec{n})$ spin transfer experiments 1210
Daniel S. Koltun
Dynamical effects of deformation in the coupled two-rotor system 1218
Marius Grigorescu, Dirk Rompf, and Werner Scheid
Pairing interaction in exotic nuclei: Finite range or zero range? 1229
J. Meng

(Continued)

PHYSICAL REVIEW C **THIRD SERIES, VOLUME 57, NUMBER 3** **MARCH 1998**

Microscopic description of the scissors mode and its fragmentation 1233
T. Beuschel, J. P. Draayer, D. Rompf, and J. G. Hirsch
Microscopic quasiparticle-phonon description of odd-mass $^{127-133}$Xe isotopes and their β decay 1237
J. Toivanen and J. Suhonen
Energy-weighted $M1$ sum rule in deformed nuclei: A self-consistent approach 1246
N. Lo Iudice

Nuclear Reactions

^{25}Mg$(d,{}^3$He$)^{24}$Na reaction at 29 MeV and a spectroscopic analysis of the levels of ^{24}Na 1256
J. Vernotte, G. Berrier-Ronsin, S. Fortier, E. Hourani, J. Kalifa, J. M. Maison, L-H. Rosier, G. Rotbard, and B. H. Wildenthal
α-particle emission as a probe of dynamical deformations 1269
I. M. Govil, R. Singh, A. Kumar, J. Kaur, A. K. Sinha, N. Madhavan, D. O. Kataria, P. Sugathan, S. K. Kataria, K. Kumar, Bency John, and G. V. Ravi Prasad
^{12}C+ ^{12}C and ^{16}O+ ^{8}Be decay of ^{24}Mg states excited in the ^{12}C(^{16}O,^{24}Mg)α reaction 1277
M. Freer, N. M. Clarke, B. R. Fulton, J. T. Murgatroyd, A. St. J. Murphy, S. P. G. Chappell, R. L. Cowin, G. Dillon, D. L. Watson, W. N. Catford, N. Curtis, M. Shawcross, and V. F. E. Pucknell
The ^{181}Ta(^{7}Li,$5n$)^{183}Os reaction: Measurement and analysis of the excitation function and isomeric cross-section ratios 1290
M. Ismail, R. P. Sharma, and M. H. Rashid
Pion absorption in ^{12}C 1295
R. Tacik, F. Farzanpay, E. L. Mathie, P. Amaudruz, J. T. Brack, L. Felawka, R. Meier, D. Ottewell, G. R. Smith, G. Hofman, M. Kermani, S. McFarland, K. Raywood, M. Sevior, F. Bonutti, P. Camerini, N. Grion, R. Rui, and E. F. Gibson
Impact parameter dependence of light charged particle production in 25A MeV ^{16}O on Tb, Ta, and Au and 35A MeV ^{14}N on Sm and Ta 1305
D. Prindle, A. Elmaani, C. Hyde-Wright, W. Jiang, A. A. Sonzogni, R. Vandenbosch, D. Bowman, G. Cron, P. Danielewicz, J. Dinius, W. Hsi, W. G. Lynch, C. Montoya, G. Peaslee, C. Schwarz, M. B. Tsang, C. Williams, R. T. de Souza, D. Fox, and T. Moore
Polarization degrees of freedom in photoinduced two-nucleon knockout from finite nuclei 1319
Jan Ryckebusch, Dimitri Debruyne, and Wim Van Nespen
Statistical prescission point model of fission fragment angular distributions 1337
Bency John and S. K. Kataria
Excitation of nuclear anharmonic vibrations in heavy-ion fusion reactions 1349
K. Hagino, S. Kuyucak, and N. Takigawa
Phase transition in a statistical model for nuclear multifragmentation 1361
S. Das Gupta and A. Z. Mekjian
Nuclear breakup of Borromean nuclei 1366
G. F. Bertsch, K. Hencken, and H. Esbensen
Off-shell structures of nucleon-nucleon t matrices and their influence on nucleon-nucleus elastic scattering observables 1378
S. P. Weppner, Ch. Elster, and D. Hüber
Barrier and internal wave contributions to the quantum probability density and flux in light heavy-ion elastic scattering 1386
F. Brau, F. Michel, and G. Reidemeister
Level density parameter in a refined Thomas-Fermi theory 1398
J. N. De, S. Shlomo, and S. K. Samaddar
Δ excitation in K^+-nucleus collisions 1404
J. A. Oller, E. Oset, A. De Pace, and P. Fernández de Córdoba

PHYSICAL REVIEW C **THIRD SERIES, VOLUME 57, NUMBER 3** **MARCH 1998**

Effects of charge symmetry on heavy ion reaction mechanisms 1410
M. Colonna, M. Di Toro, G. Fabbri, and S. Maccarone

Relativistic/Ultrarelativistic Nuclear Collisions

Proton, deuteron, and triton emission at target rapidity in Au+Au collisions at 10.20*A* GeV: Spectra and directed flow 1416
L. Ahle, Y. Akiba, K. Ashktorab, M. D. Baker, D. Beavis, H. C. Britt, J. Chang, C. Chasman, Z. Chen, C.-Y. Chi, Y. Y. Chu, V. Cianciolo, B. A. Cole, H. J. Crawford, J. B. Cumming, R. Debbe, W. Eldredge, J. Engelage, S. Y. Fung, J. J. Gaardhoje, M. Gonin, S. Gushue, H. Hamagaki, A. G. Hansen, L. Hansen, G. Heintzelman, S. Homma, R. S. Hayano, E. Judd, J. H. Kang, H. Kaneko, A. Kumagai, K. Kurita, M. Levine, J. Luke, Y. Miake, B. Moskowitz, M. Moulson, S. Nagamiya, M. N. Namboodiri, T. K. Nayak, C. A. Ogilvie, J. Olness, L. P. Remsberg, T. C. Sangster, R. Seto, K. Shigaki, H. Sako, R. Soltz, S. G. Steadman, G. S. F. Stephans, T. Sung, M. J. Tannenbaum, J. H. Thomas, S. R. Tonse, S. Ueno-Hayashi, F. Videbæk, F. Q. Wang, Y. Wang, D. S. Woodruff, Y. Wu, G. Xu, K. Yagi, D. Zachary, W. A. Zajc, F. Zhu, and Q. Zhu (E-802 Collaboration)
Final state interactions in two-particle interferometry 1428
D. Anchishkin, U. Heinz, and P. Renk
Particle production from disoriented chiral condensates described by a coherent state 1440
Masamichi Ishihara, Masahiro Maruyama, and Fujio Takagi
Collision broadening of the ϕ meson in baryon rich hadronic matter 1449
Wade Smith and Kevin L. Haglin

Subnucleon Aspects of Nuclei/Physics of Hadrons

Regge description of charged pseudoscalar meson electroproduction above the resonance region 1454
M. Vanderhaeghen, M. Guidal, and J.-M. Laget
Nuclear matter with a Bose condensate of dibaryons in a relativistic Hartree approximation 1458
Amand Faessler, A. J. Buchmann, and M. I. Krivoruchenko
Extended coupled channels model for πN scattering and the structure of $N^*(1440)$ and $N^*(1535)$ 1464
C. Schütz, J. Haidenbauer, J. Speth, and J. W. Durso

Electroweak Interaction, Symmetries

Weak $\Lambda\Lambda K^0$ interaction 1478
Martin J. Savage and Roxanne P. Springer
Relativistic mean field calculation of parity-violating observables in francium 1485
Swati Kulkarni, C. S. Warke, and Y. K. Gambhir
Nucleon charge symmetry breaking and parity violating electron-proton scattering 1492
Gerald A. Miller

BRIEF REPORTS

Production and identification of a new heavy neutron-rich isotope ^{186}Hf 1506
Yuan Shuanggui, Yang Weifan, Li Zongwei, He Jianjun, Ma Taotao, Fang Keming, Shen Shuifa, Gan Zaiguo, Pan Qiangyan, Chen Zhantu, Guo Tianrui, Mou Wantong, Su Denggui, Xu Yanbing, Guo Junsheng, Liu Hongye, Shi Lijun, Zhao Zhizheng, and Ma Huifan
Disappearance of rotational flow and reaction plane dispersions in Kr+Au collisions 1508
W. Q. Shen, M. B. Tsang, N. Carlin, R. J. Charity, J. Feng, C. K. Gelbke, W. C. Hsi, M. J. Huang, G. J. Kunde, M-C. Lemaire, M. A. Lisa, W. G. Lynch, U. Lynen, Y. G. Ma, G. F. Peaslee, L. Phair, J. Pochodzalla, H. Sann, C. Schwarz, L. G. Sobotka, R. T. de Souza, S. R. Souza, W. Trautmann, and C. Williams

(Continued)

PHYSICAL REVIEW C **THIRD SERIES, VOLUME 57, NUMBER 3** **MARCH 1998**

Phenomenological description of the $K^{\pi}=0^{-}$ bands in some Rn and Ra isotopes 1512
A. A. Raduta, Amand Faessler, and R. K. Sheline
Double-giant-dipole resonance in ^{208}Pb 1515
S. Nishizaki and J. Wambach
Density fluctuations in the quark-gluon plasma 1518
Stanisław Mrówczyński
Influence of the pion-delta-hole configuration on the ρ meson mass spectrum in dense hadronic matter 1522
G. Chanfray and P. Schuck
Heavy ion beam lifetimes at relativistic and ultrarelativistic colliders 1525
John W. Norbury and Marsha L. Waldsmith
Structure of vacuum condensates 1528
L. S. Kisslinger and T. Meissner
Q^2 dependence of deep inelastic lepton scattering off nuclear targets 1532
O. Benhar, S. Fantoni, G. I. Lykasov, and N. V. Slavin
Quadrupole contribution to K^{+} ^{6}Li scattering 1536
Elisabeth Romotsky and P. B. Siegel
Effective triaxial deformations of even-even Ru isotopes in the neutron-proton interacting boson model 1539
J. L. M. Duarte, T. Borello-Lewin, G. Maino, and L. Zuffi

Selected Abstracts from Physical Review D 1543
Cumulative Author Index 1545