Physics Division Published Journal Articles, January-June 2009

PHY-12279-ME-2009
First Measurement of Direct $f_0(980)$ Photoproduction on the Proton
M. Battaglieri *et al.* (CLAS Collaboration)
Phys. Rev. Lett **102**, 102001/1-6 (2009)

PHY-12240-HI-2008
Structure of ^{240}Pu: Evidence for Octupole Phonon Condensation?
X. Wang, R. V. F. Janssens, M. P. Carpenter, S. Zhu, I. Wiedenhöver, U. Garg, S. Frauendorf, T. Nakatsukasa, I. Ahmad, A. Bernstein, E. Diffenderfer, S. J. Freeman, J. P. Greene, T. L. Khoo, F. G. Kondev, A. Larabee, T. Lauritsen, C. J. Lister, B. Meredith, D. Seweryniak, C. Teal, and P. Wilson
Phys. Rev. Lett. **102**, 122501/1-4 (2009)

PHY-12370-HI-2009
System Size, Energy, and Centrality Dependence of Pseudorapidity Distributions of Charged Particles in Relativistic Heavy-Ion Collisions
B. Alver *et al.* (PHOBOS Collaboration)
Phys. Rev. Lett. **102**, 142301/1-5 (2009)

PHY-12229-HI-2008
Identification of Key Astrophysical Resonances Relevant for the ^{26g}Al(p,γ)^{27}Si Reaction in Wolf-Rayet Stars, AGB Stars, and Classical Novae
G. Lotay, P. J. Woods, D. Seweryniak, M. P. Carpenter, R. V. F. Janssens, and S. Zhu
Phys. Rev. Lett. **102**, 162502/1-4 (2009)

PHY-12381-ME-2009
Measurement of Angular Distributions of Drell-Yan Dimuons in $p + p$ Interactions at 800 GeV/c
L. Y. Zhu *et al.* (FNAL E866/NuSea Collaboration)
Phys. Rev. Lett. **102**, 182001/1-4 (2009)

PHY-12280-ME-2009
Precise Measurement of the Neutron Magnetic Form Factor G_M^n in the Few-GeV^2 Region
J. Lachniet *et al.* (CLAS Collaboration)
Phys. Rev. Lett. **102**, 192001 (2009)

PHY-12488-HI-2009
γ-Ray Spectroscopy at the Limits: First Observation of Rotational Bands in ^{255}Lr
K. Ketelhut, P. T. Greenlees, D. Ackermann, S. Antalic, E. Clément, I. G. Darby, O. Dorvaux, A. Drouart, S. Eeckhaudt, B. J. P. Gall, A. Görgen, T. Grahn, C. Gray-Jones, K. Hauschild, R.-D. Herzberg, F. P. Heβberger, U. Jakobsson, G. D. Jones, P. Jones, R. Julin, S. Juutinen, T.-L. Khoo, W. Korten, M. Leino, A.-P. Leppänen, J. Ljungvall, S. Moon, M. Nyman, A. Obertelli, J. Pakarinen, E. Parr, P. Papadakis, P. Peura, J. Piot, A. Pritchard, P. Rahkila, D. Rostron, P. Ruotsalainen, M. Sandzelius, J. Sarén, C. Scholey, J. Sorri, A. Steer, B. Sulignano, Ch. Theisen, J. Uusitalo, M. Venhart, M. Zielinska, M. Bender, and P.-H. Heenen
Phys. Rev. Lett. **102**, 212501/1-4 (2009)

PHY-12307-TH-2009
Medium Effects in ρ-Meson Photoproduction
F. Riek, R. Rapp, T.-S. H. Lee, and Y. Oh
Phys. Lett. **B677**, 116-120 (2009)

PHY-12109-TH-2008
Toward Unifying the Description of Meson and Baryon Properties
G. Eichmann, I. C. Cloët, R. Alkofer, A. Krassnigg, and C. D. Roberts
Phys. Rev. C **79**. 012202(R)/1-5 (2009)

PHY-12183-HI-2008
Nuclear Structure Relevant to Neutrinoless Double β Decay: The Valence Protons in ^{76}Ge and ^{76}Se
B. P. Kay, J. P. Schiffer, S. J. Freeman, T. Adachi, J. A. Clark, C. M. Deibel, H. Fujita, Y. Fujita, P. Grabmayr, K. Hatanaka, D. Ishikawa, H. Matsubara, Y. Meada, H. Okamura, K. E. Rehm, T. Sakemi, Y. Shimizu, H. Shimoda, K. Suda, Y. Tameshige, A. Tamii, and C. Wrede
Phys. Rev. C **79**, 021301(R)/1-4 (2009)

PHY-11947-HI-2007
Multi-Quasiparticle States in ^{256}Rf
H. B. Jeppesen, I. Dragojević, R. M. Clark, K. E. Gregorich, M. N. Ali, J. M. Allmond, C. W. Beausang, D. L. Bleuel, M. Cromaz, M. A. Deleplanque, P. A. Ellison, P. Fallon, M. A. Garcia, J. M. Gates, J. P. Greene, S. Gros, I. Y. Lee, H. L. Liu, A. O. Macchiavelli, S. L. Nelson, H. Nitsche, J. R. Pavan, L. Stavsetra, F. S. Stephens, M. Wiedeking, R. Wyss, and F. R. Xu
Phys. Rev. C **79**, 031303(R)/1-5 (2009)

PHY-12494-HI-2009
Mass of ^{11}Li from the ^{1}H(^{11}Li,^{9}Li)^{3}H Reaction
T. Roger, H. Savajols, I. Tanihata, W. Mittig, M. Alcorta, D. Bandyopadhyay, R. Bieri, L. Buchmann, M. Caamaño, B. Davids, N. Galinski, A. Gallant, D. Howell, R. Kanungo, W. Mills, S. Mythili, M. Notani, R. Openshaw, E. Padilla-Rodal, P. Roussel-Chomaz, G. Ruprecht, G. Savard, G. Sheffer, A. C. Shotter, M. Trinczek, and P. Walden
Phys. Rev. C **79**, 031603(R)/1-4 (2009)

PHY-12377-HI-2009
Lifetime of the $K^{\pi} = 8^{-}$ Isomer in the Neutron-Rich Nucleus ^{174}Er, and $N = 106$ $E1$ Systematics
G. D. Dracoulis, G. J. Lane, F. G. Kondev, H. Watanabe, D. Seweryniak, S. Zhu, M. P. Carpenter, C. J. Chiara, R. V. F. Janssens, T. Lauritsen, C. J. Lister, E. A. McCutchan, and I. Stefanescu
Phys. Rev. C **79**, 061303(R)/1-4 (2009)

PHY-12489-HI-2009
High-Spin Level Scheme of ^{194}Pb
T. Kutsarova, E. A. Stefanova, A. Minkova, S. Lalkovski, A. Korichi, A. Lopez-Martens, F. Hannachi, H. Hübel, A. Görgen, A. Jansen, G. Schönwasser, T. L. Khoo, B. Herskind, M. Bergström, D. Bazzacco, and Z. Podolyak
Phys. Rev. C **79**, 014315/1-19 (2009)

PHY-12131-ME-2008
Search for Sub-Threshold Photoproduction of J/ψ Mesons
P. Bosted *et al.*
Phys. Rev. C **79**, 015209/1-7 (2009)

PHY-12238-HI-2008
Decay Properties of High-Spin Isomers and Other Structures in ^{121}Sb and ^{123}Sb
H. Watanabe, G. J. Lane, G. D. Dracoulis, T. Kibédi, A. P. Byrne, P. Nieminen, R. O. Hughes, F. G. Kondev, M. P. Carpenter, R. V. F. Janssens, T. Lauritsen, D. Seweryniak, S. Zhu, P. Chowdhury, and C.-B. Moon
Phys. Rev. C **79**, 024306/1-15 (2009)

PHY-12493-HI-2009
Comprehensive γ-Ray Spectroscopy of Rotational Bands in the $N = Z + 1$ Nucleus ^{61}Zn
L.-L. Andersson, I. Ragnarsson, D. Rudolph, E. K. Johansson, D. A. Torres, C. Andreoiu, M. P. Carpenter, R. J. Charity, C. J. Chiara, J. Ekman, C. Fahlander, C. Hoel, O. L. Pechenaya, W. Reviol, R. du Rietz, D. G. Sarantites, D. Seweryniak, L. G. Sobotka, and S. Zhu
Phys. Rev. C **79**, 024312/1-13 (2009)

PHY-12095-TH-2008
Extraction of Resonances from Meson-Nucleon Reactions
N. Suzuki, T. Sato, and T.-S. H. Lee
Phys. Rev. C **79**, 025205/1-6 (2009)

PHY-12111-TH-2008
Dynamical Coupled-Channels Study of $\pi N \rightarrow \pi\pi N$ Reactions
H. Kamano, B. Juliá-Díaz, T.-S. Harry Lee, A. Matsuyama, and T. Sato
Phys. Rev. C **79**, 025206/1-11 (2009)

PHY-12401-HI-2009
$(h_{11/2}, g_{7/2})_{9-}$ Neutron Excitation in ^{92,94,96}Sr
T. Rząca-Urban, K. Sieja, W. Urban, F. Nowacki, J. L. Durell, A. G. Smith, and I. Ahmad
Phys. Rev. C **79**, 024319/1-10 (2009)

PHY-12110-TH-2008

Enhanced Effect of Quark Mass Variation in ^{229}Th and Limits from Oklo Data

V. V. Flambaum and R. B. Wiringa

Phys. Rev. C **79**, 034302/1-8 (2009)

PHY-12235-HI-2008

Levels Above the $19/2^-$ Isomer in ^{71}Cu: Persistence of the N = 40 Neutron Shell Gap

I. Stefanescu, W. B. Walters, R. V. F. Janssens, N. Hoteling, R. Broda, M. P. Carpenter, B. Fornal, A. A. Hecht, W. Krolas, T. Lauritsen, T. Pawlat, D. Seweryniak, J. R. Stone, X. Wang, A. Wöhr, J. Wrzesinski, and S. Zhu

Phys. Rev. C **79**, 034319/1-6 (2009)

PHY-12242-TH-2008

Chiral Susceptibility and the Scalar Ward Identity

Lei Chang, Yu-Xin Liu, Craig D. Roberts, Yuan-Mei Shi, Wei-Min Sun, and Hong-Shi Zong

Phys. Rev. C **79**, 035209/1-8 (2009)

PHY-12402-HI-2009

New Isomers and Medium-Spin Structure of the ^{95}Y Nucleus

W. Urban, K. Sieja, G. S. Simpson, H. Faust, T. Rząca-Urban, A. Zlomaniec, M. Lukasiewicz, A. G. Smith, J. L. Durell, J. F. Smith, B. J. Varley, F. Nowacki, and I. Ahmad

Phys. Rev. C **79**, 044304/1-13 (2009)

PHY-12285-HI-2009

Structure of ^{65,67}Co Studied Through the β Decay of ^{65,67}Fe and a Deep-Inelastic Reaction

D. Pauwels, O. Ivanov, J. Büscher, T. E. Cocolios, M. Huyse, Yu. Kudryavtsev, R. Raabe, M. Sawicka, J. Van de Walle, P. Van Duppen, A. Korgul, I. Stefanescu, A. A. Hecht, N. Hoteling, A. Wöhr, W. B. Walters, R. Broda, B. Fornal, W. Krolas, T. Pawlat, J. Wrzesinski, M. P. Carpenter, R. V. F. Janssens, T. Lauritsen, D. Seweryniak, S. Zhu, J. R. Stone, and X. Wang

Phys. Rev. C **79**, 044309/1-15 (2009)

PHY-12495-HI-2009

Evidence for a β-Decaying $1/2^-$ Isomer in ^{71}Ni

I. Stefanescu, D. Pauwels, N. Bree, T. E. Cocolios, J. Diriken, S. Franchoo, M. Huyse, O. Ivanov, Y. Kudryavtsev, N. Patronis, J. Van De Walle, P. Van Duppen, and W. B. Walters

Phys. Rev. C **79**, 044325/1-6 (2009)

PHY-12292-HI-2009

A Survey of Heavy-Ion Fusion Hindrance for Lighter Systems

C. L. Jiang, K. E. Rehm, B. B. Back, and R. V. F. Janssens

Phys. Rev. C **79**, 044601/1-6 (2009)

PHY-12096-TH-2008
Paris $N\bar{N}$ Potential Constrained by Recent Antiprotonic-Atom Data and $\bar{n}p$ Total Cross Sections
B. El-Bennich, M. Lacombe, B. Loiseau, and S. Wycech
Phys. Rev. C **79**, 054001/1-9 (2009)

PHY-12329-HI-2009
Low-Energy Structure of ^{61}Mn Populated Following β Decay of ^{61}Cr
H. L. Crawford, P. F. Mantica, J. S. Berryman, R. Broda, B. Fornal, C. R. Hoffman, N. Hoteling, R. V. F. Janssens, S. M. Lenzi, J. Pereira, J. B. Stoker, S. L. Tabor, W. B. Walters, X. Wang, and S. Zhu
Phys. Rev. C **79**, 054320/1-7 (2009)

PHY-12317-HI-2009
Identification of the $g_{9/2}$-Proton Bands in the Neutron-Rich ^{71,73,75,77}Ga Nuclei
I. Stefanescu, W. B. Walters, R. V. F. Janssens, S. Zhu, R. Broda, M. P. Carpenter, C. J. Chiara, B. Fornal, B. P. Kay, F. G. Kondev, W. Krolas, T. Lauritsen, C. J. Lister, E. A. McCutchan, T. Pawlat, D. Seweryniak, J. R. Stone, N. J. Stone, and J. Wrzesinski
Phys. Rev. C **79**, 064302/1-12 (2009)

PHY-12425-HI-2009
Multi-Quasiparticle Isomers Involving Proton-Particle and Neutron-Hole Configurations in ^{131}I and ^{133}I
H. Watanabe, G. J. Lane, G. D. Dracoulis, A. P. Byrne, P. Nieminen, F. G. Kondev, K. Ogawa, M. P. Carpenter, R. V. F. Janssens, T. Lauritsen, D. Seweryniak, S. Zhu, and P. Chowdhury
Phys. Rev. C **79**, 064311/1-8 (2009)

PHY-12335-HI-2009
Spectroscopy of ^{257}Rf
J. Qian, A. Heinz, T. L. Khoo, R. V. F. Janssens, D. Peterson, D. Seweryniak, I. Ahmad, M. Asai, B. B. Back, M. P. Carpenter, A. B. Garnsworthy, J. P. Greene, A. A. Hecht, C. L. Jiang, F. G. Kondev, T. Lauritsen, C. J. Lister, A. Robinson, G. Savard, R. Scott, R. Vondrasek, X. Wang, R. Winkler, and S. Zhu
Phys. Rev. C **79**, 064319/1-13 (2009)

PHY-12337-TH-2009
Indications of a Shallow Potential in ^{48}Ca + ^{96}Zr Fusion Reactions
H. Esbensen and C. L. Jiang
Phys. Rev. C **79**, 064619/1-7 (2009)

PHY-12093-TH-2008
Strange Magnetic Form Factor of the Proton at $Q^2 = 0.23$ GeV^2
P. Wang, D. B. Leinweber, A. W. Thomas, and R. D. Young
Phys. Rev. C **79**, 065202/1-11 (2009)

PHY-12465-ME-2009
π^+ Photoproduction on the Proton for Photon Energies from 0.725 to 2.875 GeV
M. Dugger *et al.* (CLAS Collaboration)
Phys. Rev. C **79**, 065206/1-14 (2009)

PHY-12403-HI-2009
Mapping Neutron Levels in the $A \sim 100$ Region: The $\nu 3/2^+$ [411] Band in ^{103}Zr
W. Urban, J. A. Pinston, T. Rząca-Urban, E. Wolska, J. Genevey, G. S. Simpson, A. G. Smith, J. L. Durell, B. Varley, and I. Ahmad
Phys. Rev. C **79**, 067301/1-5 (2009)

PHY-12261-TH-2009
Scalar Resonances in a Unitary $\pi\pi$ S-Wave Model for $D^+ \to \pi^+\pi^-\pi^+$
D. R. Boito, J.-P. Dedonder, B. El-Bennich, O. Leitner, and B. Loiseau
Phys. Rev. D **79**, 034020/1-12 (2009)

PHY-12193-TH-2008
Scalar Meson $f_0(980)$ in Heavy-Meson Decays
B. El-Bennich, O. Leitner, J.-P. Dedonder, and B. Loiseau
Phys. Rev. D **79**, 076004/1-22 (2009)

PHY-12172-TH-2008
Chiral Extrapolation of Octet-Baryon Charge Radii
P. Wang, D. B. Leinweber, A. W. Thomas, and R. D. Young
Phys. Rev. D **79**, 094001/1-12 (2009)

PHY-12308-TH-2009
CP Violation and Pion-Kaon Interactions in $B \to K\pi^+\pi^-$ Decays
B. El-Bennich, A. Furman, R. Kamiński, L. Leśniak, B. Loiseau, and B. Moussallam
Phys. Rev. D **79**, 094005/1-28 (2009)

PHY-12300-RI-2009
Analysis and Recombination of Multiple-Charge-State Beams from an Electron Cyclotron Resonance Ion Source
P. N. Ostroumov, S. A. Kondrashev, B. Mustapha, R. Scott, and N. E. Vinogradov
Phys. Rev. ST Accel. Beams **12**, 010101/1-6 (2009)

PHY-12056-RI-2008
Transfer Map Approach to and Optical Effects of Energy Degraders in Fragment Separators
B. Erdelyi, L. Bandura, and J. Nolen
Phys. Rev. ST Accel. Beams **12**, 014003/1-14 (2009)

PHY-12252-RI-2009
Numerical Simulations of Stripping Effects in High-Intensity Hydrogen Ion Linacs
J.-P. Carneiro, B. Mustapha, and P. N. Ostroumov
Phys. Rev. ST Accel. Beams **12**, 040102/1-12 (2009)

PHY-12145-HI-2008
Shape Phase Transitions in Geometrical and Algebraic Nuclear Collective Models
Dennis Bonatsos and E. A. McCutchan
Nucl. Phys. News **19**, 13-17 (2009)

PHY-12249-HI-2009
First Measurement of Single-Particle Energies in ^{100}Sn
Dariusz Seweryniak
Nucl. Phys. News **19**, 18-21 (2009)

PHY-12181-ME-2008
Simple Atom, Extreme Nucleus - Laser Trapping and Probing of ^{6}He and ^{8}He
Zheng-Tian Lu and Peter Mueller
Nucl. Phys. News **19**, 28-32 (2009)

PHY-12101-HI-2008
Performance Tests of Large Area Position-Sensitive Planar Germanium Detectors with Conventional and Amorphous Contacts
S. Gros, N. J. Hammond, C. J. Lister, P. Chowdhury, S. M. Fischer, and S. J. Freeman
Nucl. Instrum. Methods **A602**, 467-476 (2009)

PHY-12498-HI-2009
The LEBIT 9.4 T Penning Trap Mass Spectrometer
R. Ringle, G. Bollen, A. Prinke, J. Savory, P. Schury, S. Schwarz, and T. Sun
Nucl. Instrum. Methods **A604**, 536-547 (2009)

PHY-12324-TH-2009
CNO "Breakout" and Nucleosynthesis in Classical Novae
S. Ami Glasner and James W. Truran
Astrophys. J. Lett. **692**, L58-L61 (2009)

PHY-12325-TH-2009
Nucleosynthesis Modes in the High-Entropy-Wind of Type II Supernovae: Comparison of Calculations with Halo-Star Observations
K. Farouqi, K.-L. Kratz, L. I. Mashonkina, B. Pfeiffer, J. J. Cowan, F.-K. Thielemann, and J. W. Truran
Astrophys. J. Lett. **694**. L49-L53 (2009)

PHY-12323-TH-2009
Study of the Detonation Phase in the Gravitationally Confined Detonation Model of Type Ia Supernovae
Casey A. Meakin, Ivo Seitenzahl, Dean Townsley, George C. Jordan IV, James Truran, and Don Lamb
Astrophys. J. **693**, 1188-1208 (2009)

PHY-12429-TH-2009
On the Methods for Constructing Meson-Baryon Reaction Models Within Relativistic Quantum Field Theory
B. Juliá-Díaz, H. Kamano, T.-S. H. Lee, A. Matsuyama, T. Sato, and N. Suzuki
Chin. J. Phys. **47**, 142 (2009)

PHY-12499-HI-2009
Recent Results from PHOBOS on Particle Production at High p_T
B. Alver *et al.* (PHOBOS Collaboration)
Eur. Phys. J. C **61**, 575-582 (2009)

PHY-12227-TH-2008
Survey of Nucleon Electromagnetic Form Factors
I. C. Cloët, G. Eichmann, B. El-Bennich, T. Klähn, and C. D. Roberts
Few-Body Systems **46**, 1-36 (2009)

PHY-12262-ME-2009
Precision Spectroscopy of the Helium Atom
Shui-Ming Hu, Zheng-Tian Lu, and Zong-Chao Yan
Frontiers of Physics in China **4**, 165-169 (2009)

PHY-12044-TH-2008
Hyperfine Mixing and the Semileptonic Decays of Double-Heavy Baryons in a Quark Model
W. Roberts and Muslema Pervin
Int. J. Mod. Phys. A **24**, 2401-2413 (2009)

PHY-12065-ME-2008
Neutron Structure Functions
J. Arrington, F. Coester, R. J. Holt, and T.-S. H. Lee
J. Phys. G **36**, 025005/1-15 (2009)

PHY-12305-TH-2009
Dynamical Models of the Excitations of Nucleon Resonances
T. Sato and T.-S. H. Lee
J. Phys. G **36**, 073001/1-39 (2009)

PHY-12287-RI-2009
Development of a Liquid Lithium Thin Film for Use as a Heavy Ion Beam Stripper
Y. Momozaki, J. Nolen, C. Reed, V. Novick, and J. Specht
Jrnl. of Instr. **4**, P04005/1-19 (2009)

PHY-12116-RI-2008
Conceptual Design of a Superconducting Quadrupole with Elliptical Acceptance and Tunable Higher Order Multipoles
S. Manikonda, J. Nolen, M. Berz, and K. Makino
Jrnl. of Instr. **24**, 923-940 (2009)

PHY-12400-HI-2009
Unexpected Doubly Magic Nucleus
R. V. F. Janssens
Nature **459**, 1069-1070 (2009)

PHY-12250-ME-2009
The Role of Carrier Gases in the Production of Metastable Argon Atoms in an RF Discharge
Kenneth Rudinger, Zheng-Tian Lu, and Peter Mueller
Rev. Sci. Instrum. **80**, 036105/1-2 (2009)

PHY-12112-TH-2008
Ugo Fano *July 28, 1912 - February 13, 2001*
R. Stephen Berry, Mitio Inokuti, and A. R. P. Rau
Biographical Memoir of Ugo Fano, National Academy Press, pp. 1-22 (2009)