

Physics Division Published Journal Articles, January-June 2012

PHY-13060-HI-2011

Test of Sum Rules in Nucleon Transfer Reactions

J. P. Schiffer, C. R. Hoffman, B. P. Kay, J. A. Clark, C. M. Deibel, S. J. Freeman, A. M. Howard, A. J. Mitchell, P. D. Parker, D. K. Sharp, and J. S. Thomas
Phys. Rev. Lett. **108**, 022501/1-5 (2012)

PHY-13204-HI-2012

Evidence for a Smooth Onset of Deformation in the Neutron-Rich Kr Isotopes

M. Albers, N. Warr, K. Nomura, A. Blazhev, J. Jolie, D. Mücher, B. Bastin, C. Bauer, C. Bernards, L. Bettermann, V. Bildstein, J. Butterworth, M. Cappellazzo, J. Cederkill, D. Cline, I. Darby, S. Das Gupta, J. M. Daugas, T. Davinson, H. De Wine, J. Diriken, D. Filipescu, E. Fiori, C. Fransen, L. P. Gaffney, G. Georgieva, R. Gernhäuser, M. Hackstein, S. Heinze, H. Hess, M. Huyse, D. Jenkins, J. Konki, M. Kowalczyk, T. Kröll, R. Krücken, J. Litzinger, R. Lutter, N. Marginean, C. Mihai, K. Moschner, P. Napiorkowski, B. S. Nara Singh, K. Nowak, T. Otsuka, I. Parkarinen, M. Pfeiffer, D. Radeck, P. Reiter, S. Righby, L. M. Rubledo, R. Rodriguez-Guzmain, M. Rudigier, P. Sarriguren, M. Scheck, M. Seidlitz, B. Siebeck, G. Simpson, P. Thöle, T. Thomas, J. Van de Walle, P. Van Duppen, M. Vermeulen, D. Voulot, R. Wadsworth, F. Wenander, K. Wimmer, K. O. Zell, and M. Zielinska
Phys. Rev. Lett. **108**, 062701/1-5 (2012)

PHY-13040-ME-2011

New Measurements of High-Momentum Nucleons and Short-Range Structures in Nuclei

N. Fomin *et al.*
Phys. Rev. Lett. **108**, 092502/1-5 (2012)

PHY-13207-ME-2012

New Precision Limit on the Strange Vector Form Factors of the Proton

Z. Ahmed *et al.* (HAPPEX Collaboration)
Phys. Rev. Lett. **108**, 102001/1-5 (2012)

PHY-13219-ME-2012

Measurement of the Neutron Radius of ^{208}Pb through Parity Violation in Electron Scattering

S. Abrahamyan *et al.* (PREX Collaboration)
Phys. Rev. Lett. **108**, 112502/1-6 (2012)

PHY-13166-HI-2012

Precision Measurement of the ^6He Half-Life and the Weak Axial Current in Nuclei

A. Knecht, R. Hong, D. W. Zumwalt, B. G. Delbridge, A. García, P. Müller, H. E. Swanson, I. S. Towner, S. Utsuno, W. Williams, and C. Wrede
Phys. Rev. Lett. **108**, 122502/1-5 (2012)

PHY-13220-ME-2012

Measurement of the Neutron F_2 Structure Function via Spectator Tagging with CLAS

N. Baillie *et al.* (CLAS Collaboration)

Phys. Rev. Lett. **108**, 142001/1-6 (2012)

PHY-13248-ME-2012

Polarization Components in π^0 Photoproduction at Photon Energies up to 5.6 GeV

W. Luo *et al.* (Gep-III and GEp2 γ Collaborations)

Phys. Rev. Lett. **108**, 222004/1-6 (2012)

PHY-13278-ME-2012

How Well Do We Know the Neutron Structure Function?

J. Arrington, J. G. Rubin, and W. Melnitchouk

Phys. Rev. Lett. **108**, 252001/1-5 (2012)

PHY-13051-ME-2011

How Well Do We Know the Neutron Structure Function?

J. Arrington, J. G. Rubin, and W. Melnitchouk

Phys. Rev. Lett. **108**, 252001/1-5 (2012)

PHY-13206-HI-2012

Key Resonances in the $^{30}\text{P}(\rho,\gamma)^{31}\text{S}$ Gateway Reaction for the Production of Heavy Elements in ONe Novae

D. T. Doherty, G. Lotay, P. J. Woods, D. Seweryniak, M. P. Carpenter, C. J. Chiara, H. M. David, R. V. F. Janssens, L. Trache, and S. Zhu

Phys. Rev. Lett. **108**, 262502/1-5 (2012)

PHY-13168-HI-2012

Long-Lived Three-Quasiparticle Isomers in ^{191}Ir and ^{193}Ir with Triaxial Deformation

G. D. Dracoulis, G. J. Lane, A. P. Byrne, H. Watanabe, R. O. Hughes, N. Palalani, F. G.

Kondev, M. Carpenter, R. V. F. Janssens, T. Lauritsen, C. J. Lister, D. Seweryniak, S. Zhu, P.

Chowdhury, Y. Shi, and F. R. Xu

Phys. Lett. **B709**, 59-64 (2012)

PHY-13199-ME-2012

Evidence for the Onset of Color Transparency in ρ^0 Electroproduction Off Nuclei

L. El Fassi *et al.* (CLAS Collaboration)

Phys. Lett. **B712**, 326-330 (2012)

PHY-12742-ME-2010

Semi-Inclusive Charged-Pion Electroproduction Off Protons and Deuterons: Cross Sections, Ratios and Access to the Quark-Parton Model at Low Energies

R. Asaturyan *et al.*

Phys. Rev. C **85**, 015202/1-31 (2012)

PHY-13095-HI-2011

Collective and Noncollective States in ^{120}Te

Somnath Nag, A. K. Singh, A. N. Wilson, J. Rogers, H. Hübel, A. Bürger, S. Chmel, I. Ragnarsson, G. Sletten, B. Herskind, M. P. Carpenter, R. V. F. Janssens, T. L. Khoo, F. G. Kondev, T. Lauritsen, S. Zhu, A. Korichi, Hoa Ha, P. Fallon, A. O. Macchiavelli, B. M. Nyakó, J. Timár, and K. Juhász

Phys. Rev. C **85**, 014310/1-14 (2012)

PHY-13151-HI-2011

Correlation Between the $^{12}\text{C} + ^{12}\text{C}$, $^{12}\text{C} + ^{13}\text{C}$, and $^{13}\text{C} + ^{13}\text{C}$ Fusion Cross Sections

M. Notani, H. Esbensen, X. Fang, B. Bucher, P. Davies, C. L. Jiang, L. Lamm, C. J. Lin, C. Ma, E. Martin, K. E. Rehm, W. P. Tan, S. Thomas, X. D. Tang, and E. Brown

Phys. Rev. C **85**, 014607/1-7 (2012)

PHY-13085-TH-2011

Expanding the Concept of In-Hadron Condensates

Lei Chang, Craig D. Roberts, and Peter C. Tandy

Phys. Rev. C **85**, 012201/1-5 (2012)

PHY-13195-HI-2012

Isomeric Levels in ^{92}Rb and the Structure of Neutron-Rich $^{92,94}\text{Rb}$ Isotopes

W. Urban, K. Sieja, G. S. Simpson, T. Soldner, T. Rzaca-Urban, A. Zlomaniec, I. Tsekhanovich, J. A. Dare, A. G. Smith, J. L. Durell, J. F. Smith, R. Orlandi, A. Scherillo, I. Ahmad, J. P. Greene, J. Jolie, and A. Linneman

Phys. Rev. C **85**, 014329/1-9 (2012)

PHY-13149-TH-2011

Flavor $SU(4)$ Breaking Between Effective Couplings

Bruno El-Bennich, Gastão Krein, Lei Chang, Craig D. Roberts, and David J. Wilson

Phys. Rev. D **85**, 031502/1-6 (2012)

PHY-13194-HI-2012

Low-Spin Structure of ^{85}Se and the β_n Branching of ^{85}As

J. Kurpeta, W. Urban, T. Matema, H. Faust, U. Köster, J. Rissanen, T. Rzaca-Urban, C. Mazzocchi, A. G. Smith, J. F. Smith, J. P. Greene, and I. Ahmad

Phys. Rev. C **85**, 027302/1-4 (2012)

PHY-13198-HI-2012

Core-Coupled Protons, $f_{7/2}$ Intruder States, and Competing $g_{9/2}$ Proton and Neutron Structures in $^{65,67}\text{Cu}$

C. J. Chiara, I. Stefanescu, W. B. Walters, S. Zhu, R. V. F. Janssens, M. P. Carpenter, R. Broda, B. Fornal, A. A. Hecht, N. Hoteling, E. G. Jackson, B. P. Kay, W. Królas, T. Lauritsen, E. A. McCutchan, T. Pawlat, D. Seweryniak, X. Wang, A. Wöhr, and J. Wrzesiński
Phys. Rev. C **85**, 024309/1-20 (2012)

PHY-13163-HI-2011

$M3$ and $E4$ K -Forbidden Decays of the $K^\pi = 23/2^-$ Isomer in ^{177}Lu

F. G. Kondev, S. Zhu, M. P. Carpenter, R. V. F. Janssens, I. Ahmad, C. J. Chiara, J. P. Greene, T. Lauritsen, D. Seweryniak, S. Lalkovski, and P. Chowdhury
Phys. Rev. C **85**, 027304/1-5 (2012)

PHY-13147-TH-2011

Nucleon and Roper Electromagnetic Elastic and Transition Form Factors

D. J. Wilson, I. C. Cloët, L. Chang, and C. D. Roberts
Phys. Rev. C **85**, 025205/1-21 (2012)

PHY-13084-TH-2011

Investigation of Rainbow-Ladder Truncation for Excited and Exotic Mesons

Si-xue Qin, Lei Chang, Yu-xin Liu, Craig D. Roberts, and David J. Wilson
Phys. Rev. C **85**, 035202/1-10 (2012)

PHY-13167-HI-2012

High-Spin Spectrum of ^{24}Mg Studied Through Multiparticle Angular Correlations

E. S. Diffenderfer, L. T. Baby, D. Santiago-Gonzalez, N. Ahsan, A. Rojas, A. Volya, I. Wiedenhöver, A. H. Wuosmaa, M. P. Carpenter, R. V. F. Janssens, C. J. Lister, M. Devlin, D. G. Sarantites, L. G. Sobotka, Y. Utsuno, and M. Horoi
Phys. Rev. C **85**, 034311/1-17 (2012)

PHY-13156-HI-2011

Core Excitations Beyond Maximally Aligned Configurations in ^{123}I

Purnima Singh, A. K. Singh, A. N. Wilson, J. Rogers, H. Hübel, A. Bürger, S. Chmel, I. Ragnarsson, G. Sletten, B. Herskind, M. P. Carpenter, R. V. F. Janssens, T. L. Khoo, F. G. Kondev, T. Lauritsen, S. Zhu, A. Korichi, Hoa Ha, P. Fallon, B. M. Nyakó, J. Timár, and K. Juhász
Phys. Rev. C **85**, 034319/1-11 (2012)

PHY-13094-HI-2011

Fusion of $^{40}\text{Ca} + ^{40}\text{Ca}$ and Other Ca + Ca Systems Near and Below the Barrier

G. Montagnoli, A. M. Stefanini, C. L. Jiang, H. Esbensen, L. Corradi, S. Courtin, E. Fioretto, A. Goasduff, F. Haas, A. F. Kifle, C. Michelagnoli, D. Montanari, T. Mijatovic, K. E. Rehm, R. Silvestri, P. P. Singh, F. Scarlassara, S. Szilner, X. D. Tang, and C. A. Ur
Phys. Rev. C **85**, 024607 (2012)

PHY-13138-HI-2011

Nature of Yrast Excitations Near $N = 40$: Level Structure of ^{67}Ni

S. Zhu, R. V. F. Janssens, M. P. Carpenter, C. J. Chiara, R. Broda, B. Fornal, N. Hoteling, W. Królas, T. Lauritsen, T. Pawlat, D. Seweryniak, I. Stefanescu, J. R. Stone, W. B. Walters, X. Wang, and J. Wrzesiński
Phys. Rev. C **85**, 034336/1-7 (2012)

PHY-13174-HI-2012

Study of the $^{19}\text{O}(d,p)^{20}\text{O}$ Reaction in Inverse Kinematics

C. R. Hoffman, B. B. Back, B. P. Kay, J. P. Schiffer, M. Alcorta, S. I. Baker, S. Bedoor, P. F. Bertone, J. A. Clark, C. M. Deibel, B. DiGiovine, S. J. Freeman, J. P. Greene, J. C. Lighthall, S. T. Marley, R. C. Pardo, K. E. Rehm, A. Jojas, D. Santiago-Gonzalez, D. K. Sharp, D. V. Shetty, J. S. Thomas, I. Wiedenhöver, and A. H. Wuosmaa
Phys. Rev. C **85**, 054318 (2012)

PHY-13150-TH-2011

Comparing Nonperturbative Models of the Breakup of Neutron-Halo Nuclei

P. Capel, H. Esbensen, and F. M. Nunes
Phys. Rev. C **85**, 044604/1-7 (2012)

PHY-13193-HI-2012

Multi-Intruder Structures in ^{34}P

P. C. Bender, S. L. Tabor, Vandana Tripathi, C. R. Hoffman, L. Hamilton, A. Volya, R. M. Clark, P. Fallon, A. O. Macchiavelli, S. Paschalis, M. Petri, M. P. Carpenter, R. V. F. Janssens, T. Lauritsen, E. A. McCutchan, D. Seweryniak, S. Zhu, C. J. Chiara, X. Chen, W. Reviol, D. G. Sarantites, and Y. Toh
Phys. Rev. C **85**, 044305/1-10 (2012)

PHY-13203-HI-2012

Magnetic Rotation and Quasiparticle Structures in ^{58}Fe : Influence of the $\nu g_{9/2}$ Orbital

D. Steppenbeck, R. V. F. Janssens, S. J. Freeman, M. P. Carpenter, P. Chowdhury, A. N. Deacon, M. Honma, H. Jin, T. Lauritsen, C. J. Lister, J. Meng, J. Peng, D. Seweryniak, J. F. Smith, Y. Sun, S. L. Tabor, B. J. Varley, Y.-C. Yang, S. Q. Zhang, P. W. Zhao, and S. Zhu
Phys. Rev. C **85**, 044316/1-23 (2012)

PHY-13178-TH-2012

Dynamical Chiral Symmetry Breaking and the Fermion-Gauge-Boson Vertex

A. Bashir, R. Bermudez, L. Chang, and C. D. Roberts

Phys. Rev. C **85**, 045205/1-7 (2012)

PHY-12986-TH-2011

Tracing Masses of Ground-State Light-Quark Mesons

Lei Chang and Craig D. Roberts

Phys. Rev. C **85**, 052201/1-5 (2012)

PHY-13259-HI-2012

High-Spin Proton Alignments and Evidence for a Second Band with Enhanced Deformation in ^{171}Hf

Y. C. Zhang, Q. A. Ijaz, W. C. Ma, G. B. Hagemann, M. P. Carpenter, P. Chowdhury, D. M. Cullens, M. K. Djongolov, D. J. Hartley, R. V. F. Janssens, T. L. Khoo, F. G. Kondev, T. Lauritsen, E. Ngiojoi-Yogo, S. Ødegård, L. L. Riedinger, S. V. Rigby, D. G. Roux, D. T. Scholes, R. B. Yadav, and S. Zhu

Phys. Rev. C **85**, 064307/1-17 (2012)

PHY-13247-TH-2012

Structures in High-Energy Fusion Data

H. Esbensen

Phys. Rev. C **85**, 064611/1-9 (2012)

PHY-13196-HI-2012

The Use of the Gas-Filled Magnet Technique for the Detection of Medium Mass Ions

J. M. Figueira, K. E. Rehm, C. M. Deibel, J. O. Fernandez Niello, J. Greene, C. L. Jiang, H.

Y. Lee, S. T. Marley, R. C. Pardo, N. Patel, M. Paul, C. Ugalde, and G. Zinkann

Nucl. Instrum. Methods **A670**, 32-39 (2012)

PHY-13230-AL-2012

Reducing Potassium Contamination for Ams Detection of ^{39}Ar with an Electron-Cyclotron-Resonance Ion Source

P. Collon, M. Bowers, F. Calaprice, C. Galbiati, D. Henderson, T. Hohman, C. L. Jiang, W.

Kutschera, H. Y. Lee, B. Loer, R. C. Pardo, M. Paul, E. Rehm, D. Robertson, C. Schmidt, R. Scott, and R. Vondrasek

Nucl. Instrum. Methods B **283**, 77 (2012)

PHY-13171-HI-2012

Measurements of Fusion Cross Sections in $^{12}\text{C} + ^{12}\text{C}$ at Low Beam Energies Using a Particle- γ Coincidence Technique

C. L. Jiang, K. E. Rehm, X. Fang, X. D. Tang, M. Alcorta, B. B. Back, B. Bucher, P. Collon, C. M. Deibel, B. DiGiovine, J. P. Greene, D. J. Henderson, R. V. F. Janssens, T. Lauritsen, C.

J. Lister, S. T. Marley, R. C. Pardo, D. Seweryniak, C. Ugalde, and S. Zhu

Nucl. Instrum. Methods **A682**, 12-15 (2012)

PHY-13334-HI-2012

The Origin of Oxygen in the Universe - A New Approach to an Old Question

K. E. Rehm

J. Phys. Conf. Ser. **337**, 012006 (2012)

PHY-13335-HI-2012

Upper Limit on the Molecular Resonance Strengths in the $^{12}\text{C} + ^{12}\text{C}$ Fusion Reaction

X. D. Tang, X. Fang, B. Bucher, H. Esbensen, C. L. Jiang, K. E. Rehm and C. J. Lin

J. Phys. Conf. Ser. **337**, 012016 (2012)

PHY-12840-HI-2010

The Early Period of the Mössbauer Effect and the Beginning of the Iron Age

John P. Schiffer

Chap. 4 in *The Rudolf Mossbauer Story*, eds. Michael Kalvius and Paul Kienle

(Springer-Verlag Berlin Heidelberg, 2012), pp. 49-68

PHY-13216-HI-2012

A Shorter ^{146}Sm Half-Life Measured and Implications for ^{146}Sm - ^{142}Nd Chronology in the Solar System

N. Kinoshita, M. Paul, Y. Kashiv, P. Collon, C. M. Deibel, B. DiGiovine, J. P. Greene, D. J. Henderson, C. L. Jiang, S. T. Marley, T. Nakanishi, R. C. Pardo, K. E. Rehm, D. Robertson, R. Scott, C. Schmitt, X. D. Tang, R. Vondrasek, and A. Yokoyama

Science **335**, 1614-1617 (2012)