

Physics Division Published Journal Articles, January-June 2013

PHY-13411-HI-2013

Is γ -Ray Emission from Novae Affected by Interference Effects in the $^{18}\text{F}(p,\alpha)^{15}\text{O}$ Reaction?

A. M. Laird, A. Parikh, A. St. J. Murphy, K. Wimmer, A. A. Chen, C. M. Deibel, T. Faestermann, S. P. Fox, B. R. Fulton, R. Hertzenberger, D. Irvine, J. José, R. Longland, D. J. Mountford, B. Sambrook, D. Seiler, and H.-F. Wirth
Phys. Rev. Lett. **110**, 032502/1-5 (2013)

PHY-13377-HI-2012

Origin and Consequences of $^{12}\text{C} + ^{12}\text{C}$ Fusion Resonances at Deep Sub-Barrier Energies

C. L. Jiang, B. B. Back, H. Esbensen, R. V. F. Janssens, K. E. Rehm, and R. J. Charity
Phys. Rev. Lett. **110**, 072701/1-5 (2013)

PHY-13244-HI-2012

β -Delayed Neutron Spectroscopy Using Trapped Radioactive Ions

R. M. Yee, N. D. Scielzo, P. F. Bertone, F. Buchinger, S. Caldwell, J. A. Clark, C. M. Deibel, J. Fallis, J. P. Greene, S. Gulick, D. Lascar, A. F. Levand, G. Li, E. B. Norman, M. Pedretti, G. Savard, R. E. Segel, K. S. Sharma, M. G. Sternberg, J. VanSchelt, and B. J. Zabransky
Phys. Rev. Lett. **110**, 092501/1-5 (2013)

PHY-13348-HI-2012

Tensor Interaction Limit Derived from the α - β - $\bar{\nu}$ Correlation in Trapped ^8Li Ions

G. Li, R. Segel, N. D. Scielzo, P. F. Bertone, F. Buchinger, S. Caldwell, A. Chaudhuri, J. A. Clark, J. E. Crawford, C. M. Deibel, J. Fallis, S. Gulick, G. Gwinner, D. Lascar, A. F. Levand, M. Pedretti, G. Savard, K. S. Sharma, M. G. Sternberg, T. Sun, J. Van Schelt, R. M. Yee, and B. J. Zabransky
Phys. Rev. Lett. **110**, 092502/1-5 (2013)

PHY-13395-HI-2013

Tidal Waves in ^{102}Pd : A Rotating Condensate of Multiple d Bosons

A. D. Ayangeakaa, U. Garg, M. A. Caprio, M. P. Carpenter, S. S. Ghugre, R. V. F. Janssens, F. G. Kondev, J. T. Matta, S. Mukhopadhyay, D. Patel, D. Seweryniak, J. Sun, S. Zhu, and S. Frauendorf
Phys. Rev. Lett. **110**, 102501/1-5 (2013)

PHY-13398-TH-2013

Imaging Dynamical Chiral-Symmetry Breaking: Pion Wave Function on the Light Front

Lei Chang, I. C. Cloët, J. J. Cobos-Martinez, C. D. Roberts, S. M. Schmidt, and P. C. Tandy
Phys. Rev. Lett. **110**, 132001/1-5 (2013)

PHY-13444-HI-2013

Erratum: Is the Nuclear Spin-Orbit Interaction Changing with Neutron Excess? [Phys. Rev. Lett. **92**, 162501 (2004)]

J. P. Schiffer, S. J. Freeman, J. A. Caggiano, C. Deibel, A. Heinz, C.-L. Jiang, R. Lewis, A. Parikh, P. D. Parker, K. E. Rehm, S. Sinha, and J. S. Thomas
Phys. Rev. Lett. **110**, 169901/1 (2013)

PHY-13414-HI-2013

Evidence for Multiple Chiral Doublet Bands in ^{133}Ce

A. D. Ayangeakaa, U. Garg, M. D. Anthony, S. Frauendorf, J. T. Matta, B. K. Nayak, D. Patel, Q. B. Chen, S. Q. Zhang, P. W. Zhao, B. Qi, J. Meng, R. V. F. Janssens, M. P. Carpenter, C. J. Chiara, F. G. Kondev, T. Lauritsen, D. Seweryniak, S. Zhu, S. S. Ghugre, and R. Palit
Phys. Rev. Lett. **110**, 172504/1-5 (2013)

PHY-13164-HI-2011

First Determination of an Astrophysical Cross Section with a Bubble Chamber: The $^{15}\text{N}(\alpha,\gamma)^{19}\text{F}$ Reaction

C. Ugalde, B. DiGiovine, D. Henderson, R. J. Holt, K. E. Rehm, A. Sonnenschein, A. Robinson, R. Raut, G. Rusev, and A. P. Tonchev
Phys. Lett. **B719**, 74-77 (2013)

PHY-13393-HI-2013

Isomers and Excitation Modes in the Gamma-Soft Nucleus ^{192}Os

G. D. Dracoulis, G. J. Lane, A. P. Byrne, H. Watanabe, R. O. Hughes, 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. **B720**, 330-335 (2013)

PHY-13265-TH-2012

Inelastic Scattering of ^9Li and Excitation Mechanism of Its First Excited State

H. Al Falou, R. Kanungo, C. Andreoiu, D. Cross, B. Davids, M. Djongolov, A. T. Gallant, N. Galinski, D. Howell, R. Kshetri, D. Niamir, J. N. Orce, A. C. Shotter, S. Sjøe, I. Tanihata, I. J. Thompson, S. Triambak, M. Uchida, P. Walden, and R. B. Wiringa
Phys. Lett. **B721**, 224-228 (2013)

PHY-13500-ME-2013

Measurement of Transparency Ratios for Protons from Short-Range Correlated Pairs

O. Hen *et al.* (CLAS Collaboration)
Phys. Lett. **B722**, 63-68 (2013)

PHY-13424-TH-2013

Practical Corollaries of Transverse Ward-Green-Takahashi Identities

Si-xue Qin, Lei Chang, Yu-xin Liu, Craig D. Roberts, and Sebastian M. Schmidt
Phys. Lett. **B722**, 384-388 (2013)

PHY-13413-HI-2013

High-Spin Transition Quadrupole Moments in Neutron-Rich Mo and Ru Nuclei: Testing γ Softness?

J. B. Snyder, W. Reviol, D. G. Sarantites, A. V. Afanasjev, R. V. F. Janssens, H. Abusara, M. P. Carpenter, X. Chen, C. J. Chiara, J. P. Greene, T. Lauritsen, E. A. McCutchan, D. Seweryniak, and S. Zhu
Phys. Lett. **B723**, 61-65 (2013)

PHY-13604-HI-2013

Effect of Heavy-Ion Irradiation on Superconductivity in $\text{Ba}_{0.6}\text{K}_{0.4}\text{Fe}_2\text{As}_2$

N. W. Salovich, Hyunsoo Kim, Ajay K. Ghosh, R. W. Giannetta, W. Kwok, U. Welp, B. Shen, S. Zhu, H.-H. Wen, M. A. Tanatar, and R. Prozorov
Phys. Rev. B **87**, 180502(R)/1-4 (2013)

PHY-13469-HI-2013

Valence Neutron Properties Relevant to the Neutrinoless Double- β Decay of ^{130}Te

B. P. Kay, T. Bloxham, S. A. McAllister, J. A. Clark, C. M. Deibel, S. J. Freedman, S. J. Freeman, K. Han, A. M. Howard, A. J. Mitchell, P. D. Parker, J. P. Schiffer, D. K. Sharp, and J. S. Thomas
Phys. Rev. C **87**, 011302(R)/1-6 (2013)

PHY-13388-HI-2012

Electron Capture on ^{116}In and Implications for Nuclear Structure Related to Double- β Decay

C. Wrede, S. K. L. Sjøe, A. García, H. E. Swanson, I. Ahmad, A. Algora, V.-V. Elomaa, T. Eronen, J. Hakala, A. Jokinen, V. S. Kolhinen, I. D. Moore, H. Penttilä, M. Reponen, J. Rissanen, A. Saatanainen, and J. Äystö
Phys. Rev. C **87**, 031303(R)/1-5 (2013)

PHY-13437-HI-2013

Unexpected $5/2^-$ Spin of the Ground State in ^{147}Ba : No Octupole Deformation in Ground States of Odd-A Ba Isotopes

T. Rzaca-Urban, W. Urban, A. G. Smith, I. Ahmad, and S. Syntfeld-Kazuch
Phys. Rev. C **87**, 031305(R)/1-5 (2013)

PHY-13433-HI-2013

Evidence for Rigid Triaxial Deformation at Low Energy in ^{76}Ge

Y. Toh, C. J. Chiara, E. A. McCutchan, W. B. Walters, R. V. F. Janssens, M. P. Carpenter, S. Zhu, R. Broda, B. Fornal, B. P. Kay, F. G. Kondev, W. Królas, T. Lauritsen, C. J. Lister, T. Pawlat, D. Seweryniak, I. Stefanescu, N. J. Stone, J. Wrzesiński, K. Higashiyama, and N. Yoshinaga
Phys. Rev. C **87**, 041304(R)/1-5 (2013)

PHY-13446-HI-2013

Shape Coexistence in Neutron-Rich Nuclei Near $N = 40$

M. P. Carpenter, R. V. F. Janssens, and S. Zhu

Phys. Rev. C **87**, 041305(R)/1-5 (2013)

PHY-13483-HI-2013

Proton Pair Correlations and the Neutrinoless Double- β Decay of ^{76}Ge

A. Roberts, A. M. Howard, J. J. Kolata, A. N. Villano, F. D. Becchetti, P. A. DeYoung,

M. Febraro, S. J. Freeman, B. P. Kay, S. A. McAllister, A. J. Mitchell, J. P. Schiffer,

J. S. Thomas, and R. O. Torres-Isea

Phys. Rev. C **87**, 051305(R)/1-5 (2013)

PHY-13423-TH-2013

Electromagnetic Structure of $A = 2$ and 3 Nuclei in Chiral Effective Field Theory

M. Piarulli, L. Girlanda, L. E. Marcucci, S. Pastore, R. Schiavilla, and M. Viviani

Phys. Rev. C **87**, 014006/1-24 (2013)

PHY-13397-HI-2013

Neutron Single-Particle Strength Outside the $N = 50$ Core

D. K. Sharp, B. P. Kay, J. S. Thomas, S. J. Freeman, J. P. Schiffer, B. B. Back, S. Bedoor,

T. Bloxham, J. A. Clark, C. M. Deibel, C. R. Hoffman, A. M. Howard, J. C. Lighthall,

S. T. Marley, A. J. Mitchell, T. Otsuka, P. D. Parker, K. E. Rehm, D. V. Shetty, and

A. H. Wuosmaa

Phys. Rev. C **87**, 014312/1-11 (2013)

PHY-13392-HI-2013

Three-Quasiparticle Isomers and Possible Deformation in the Transitional Nuclide, ^{195}Au

G. D. Dracoulis, G. J. Lane, H. Watanabe, R. O. Hughes, N. Palalani, F. G. Kondev,

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

P. Chowdhury, W. Y. Liang, Y. Shi, and F. R. Xu

Phys. Rev. C **87**, 014326/1-10 (2013)

PHY-13390-HI-2012

Effects of Transfer Channels on Near- and Sub-Barrier Fusion of $^{32}\text{S} + ^{48}\text{Ca}$

G. Montagnoli, A. M. Stefanini, H. Esbensen, C. L. Jiang, L. Corradi, S. Courtin, E. Fioretto,

A. Goasduff, J. Grebosz, F. Haas, M. Mazzocco, C. Michelagnoli, T. Mijatovic,

D. Montanari, C. Parascandolo, K. E. Rehm, F. Scarlassara, S. Szilner, X. D. Tang, and

C. A. Ur

Phys. Rev. C **87**, 014611/1-9 (2013)

PHY-13301-TH-2012

Dressed-Quarks and the Nucleon's Axial Charge

L. Chang, C. D. Roberts, and S. M. Schmidt

Phys. Rev. C **87**, 015203/1-9 (2013)

PHY-13330-TH-2012

Electric Dipole Moment of the ρ -Meson

Mario Pitschmann, Chien-Yeah Seng, Michael J. Ramsey-Musolf, Craig D. Roberts, Sebastian M. Schmidt, and David J. Wilson

Phys. Rev. C **87**, 015205/1-12 (2013)

PHY-13387-HI-2012

Multiple Band Structures in $^{169,170}\text{Re}$: Search for the Wobbling Mode in ^{169}Re , and Residual-Interaction Analysis of Structures in ^{170}Re

D. J. Hartley, R. V. F. Janssens, L. L. Riedinger, M. A. Riley, X. Wang, S. Miller, A. D. Ayangeakaa, P. F. Bertone, M. P. Carpenter, C. J. Chiara, P. Chowdhury, U. Garg, G. Gürdal, S. S. Hota, F. G. Kondev, T. Lauritsen, W. C. Ma, J. Matta, E. A. McCutchan, S. Mukhopadhyay, E. E. Pedicini, J. R. Vanhoy, and S. Zhu

Phys. Rev. C **87**, 024315/1-15 (2013)

PHY-13382-HI-2012

Valence Nucleon Populations in the Ni Isotopes

J. P. Schiffer, C. R. Hoffman, B. P. Kay, J. A. Clark, C. M. Deibel, S. J. Freeman, M. Honma, A. M. Howard, A. J. Mitchell, T. Otsuka, P. D. Parker, D. K. Sharp, and J. S. Thomas

Phys. Rev. C **87**, 034306/1-15 (2013)

PHY-13497-ME-2013

Measurement of the $\Sigma\pi$ Photoproduction Line Shapes Near the $\Lambda(1405)$

K. Moriya *et al.* (CLAS Collaboration)

Phys. Rev. C **87**, 035206/1-24 (2013)

PHY-13445-TH-2013

Quantum Monte Carlo Calculations of Electromagnetic Moments and Transitions in $A \leq 9$ Nuclei with Meson-Exchange Currents Derived from Chiral Effective Field Theory

S. Pastore, Steven C. Pieper, R. Schiavilla, and R. B. Wiringa

Phys. Rev. C **87**, 035503/1-15 (2013)

PHY-13652-ME-2013

Near-Threshold Neutral Pion Electroproduction at High Momentum Transfers and Generalized Form Factors

P. Khetarpal *et al.* (CLAS Collaboration)

Phys. Rev. C **87**, 045205/1-16 (2013)

PHY-13501-ME-2013

Transverse Polarization of $\Sigma^+(1189)$ in Photoproduction on a Hydrogen Target in CLAS

C. S. Nepali *et al.* (CLAS Collaboration)

Phys. Rev. C **87**, 045206/1-10 (2013)

PHY-13507-TH-2013

Features and Flaws of a Contact Interaction Treatment of the Kaon

Chen Chen, Lei Chang, Craig D. Roberts, Sebastian M. Schmidt, Shaolong Wan, and David J. Wilson

Phys. Rev. C **87**, 045207/1-15 (2013)

PHY-13432-HI-2013

α Decay of $^{249}_{97}\text{Bk}$ and Levels in $^{245}_{95}\text{Am}$

I. Ahmad, J. P. Greene, F. G. Kondev, S. Zhu, M. P. Carpenter, R. V. F. Janssens, R. A. Boll, J. G. Ezold, S. M. Van Cleve, and E. Browne

Phys. Rev. C **87**, 054328/1-7 (2013)

PHY-13464-HI-2013

γ -Ray Spectroscopy of the $A = 23$, $T = 1/2$ Nuclei ^{23}Na and ^{23}Mg : High-Spin States, Mirror Symmetry, and Applications to Nuclear Astrophysical Reaction Rates

D. G. Jenkins, M. Bouhelal, S. Courtin, M. Freer, B. R. Fulton, F. Haas, R. V. F. Janssens, T. L. Khoo, C. J. Lister, E. F. Moore, W. A. Richter, B. Truett, and A. H. Wuosmaa

Phys. Rev. C **87**, 064301/1-20 (2013)

PHY-13646-ME-2013

Cross Sections for the $\gamma p \rightarrow K^{*+}\Lambda$ and $\gamma p \rightarrow K^{*+}\Sigma^0$ Reactions Measured at CLAS

W. Tang *et al.* (CLAS Collaboration)

Phys. Rev. C **87**, 065204/1-13 (2013)

PHY-13638-ME-2013

Multiplicities of Charged Pions and Kaons from Semi-Inclusive Deep-Inelastic Scattering by the Proton and the Deuteron

A. Airapetian *et al.* (HERMES Collaboration)

Phys. Rev. C **87**, 074029/1-14 (2013)

PHY-13297-TH-2012

Vacuum Polarization and Dynamical Chiral Symmetry Breaking: Phase Diagram of QED with Four-Fermion Contact Interaction

F. Akram, A. Bashir, L. X. Gutiérrez-Guerrero, B. Masud, C. Calcaneo-Roldan, and M. E. Tejeda-Yeomans

Phys. Rev. D **87**, 013011 (2013)

PHY-13404-TH-2013

Baryon and Meson Screening Masses

Kun-lun Wang, Yu-xin Liu, Lei Chang, Craig D. Roberts, and Sebastian M. Schmidt

Phys. Rev. D **87**, 074038/1-22 (2013)

PHY-13568-RI-2013

Simulation and Design of an Electron Beam Ion Source Charge Breeder for the Californium Rare Isotope Breeder Upgrade

Clayton Dickerson, Brahim Mustapha, Alexander Pikin, Sergey Kondrashev, Peter Ostroumov, Anthony Levand, and Rick Fischer

Phys. Rev. ST. Accel. Beams **16**, 024201(11) (2013)

PHY-13513-HI-2013

Fusion of $^{60}\text{Ni} + ^{100}\text{Mo}$ Near and Below the Coulomb Barrier

A. M. Stefanini, G. Montagnoli, F. Scarlassara, C. L. Jiang, H. Esbensen, E. Fioretto, L. Corradi, B. B. Back, C. M. Deibel, B. DiGiovine, J. P. Greene, H. D. Henderson, S. T. Marley, M. Notani, N. Patel, K. E. Rehm, D. Seweryniak, X. D. Tang, C. Ugalde, and S. Zhu

Eur. Phys. J. A **49**, 1-6 (2013)

PHY-13499-ME-2013

Deep Exclusive π^+ Electroproduction Off the Proton at CLAS

K. Park *et al.*

Eur. Phys. J. A **49**, 16-33 (2013)

PHY-13221-ME-2012

The Lead-Glass Electromagnetic Calorimeters for the Magnetic Spectrometers in Hall C at Jefferson Lab

H. Mkrтчhyan, R. Carlini, V. Tadevosyan, J. Arrington, A. Asaturyan, M. E. Christy, D. Dutta, R. Ent, H. C. Fenker, D. Gaskell, T. Horn, M. K. Jones, C. E. Keppel, D. J. Mack, S. P. Malace, A. Mkrтчhyan, M. I. Niculescu, J. Seely, V. Tvaskis, S. A. Wood, and S. Zhamkochyan

Nucl. Instrum. Methods **A719**, 85-100 (2013)

PHY-13290-HI-2012

Tracking Changes in Shell Structure in Neutron-Rich Nuclei as a Function of Spin

R. V. F. Janssens

Phys. Scr. **T152**, 014005/1-10 (2013)

PHY-13616-HI-2013

Viewpoint - Pushing Back the Frontier of Stability

Jerry Nolen

Physics **6**, 59 (2013)

PHY-13485-ME-2013

Color Transparency: Past, Present and Future

D. Dutta, K. Hafidi, and M. Strikman

Progress in Particle and Nuclear Physics **69**, 1-27 (2013)

PHY-13430-ME-2013

Analysis of ^{85}Kr : A Comparison at the 10^{-14} Level Using Micro-Liter Samples

G.-M. Yang, C.-F. Cheng, W. Jiang, Z.-T. Lu, R. Purtschert, Y.-R. Sun, L.-Y. Tu, and
S.-M. Hu

Sci. Rep. **3**, 1596/1-5 (2013)