

## Physics Division Published Journal Articles, July-December 2012

PHY-13285-HI-2012

Shell-Structure and Pairing Interaction in Superheavy Nuclei: Rotational Properties of the  $Z = 104$  Nucleus  $^{256}\text{Rf}$

P. T. Greenlees, J. Rubert, J. Piot, B. J. P. Gall, L. L. Andersson, M. Asai, Z. Asfari, D. M. Cox, F. Dechery, O. Dorvaux, T. Grahn, K. Hauschild, G. Henning, A. Herzan, R.-D. Herzberg, F. P. Heßberger, U. Jakobsson, P. Jones, R. Julin, S. Juutinen, S. Ketelhut, T. L. Khoo, M. Leino, J. Ljungvall, A. Lopez-Martens, R. Lozeva, P. Nieminen, J. Pakarinen, P. Papadakis, E. Parr, P. Peura, P. Rahkila, S. Rinta-Antila, P. Ruotsalainen, M. Sandzelius, J. Sarén, C. Scholey, D. Seweryniak, J. Sorri, B. Sulignano, Ch. Theisen, J. Uusitalo, and M. Venhart

Phys. Rev. Lett. **109**, 012501/1-5 (2012)

PHY-13345-ME-2012

Measurement of Exclusive  $\pi^0$  Electroproduction Structure Functions and Their Relationship to Transverse Generalized Parton Distributions

I. Bedlinskiy *et al.* (CLAS Collaboration)

Phys. Rev. Lett. **109**, 112001/1-6 (2012)

PHY-13246-HI-2012

Comment on “Precise Determination of the Unperturbed  $^8\text{B}$  Neutrino Spectrum”

S. J. Freedman, K. E. Rehm, J. P. Schiffer, and D. Seweryniak

Phys. Rev. Lett. **109**, 189201/1 (2012)

PHY-13303-HI-2012

Well-Developed Deformation in  $^{42}\text{Si}$

S. Takeuchi, M. Matsushita, N. Aoi, P. Doornenbal, K. Li, T. Motobayashi, H. Scheit, D. Steppenbeck, H. Wang, H. Baba, D. Bazin, L. Cáceres, H. Crawford, P. Fallon, R. Gernhäuser, J. Gibelin, S. Go, S. Grévy, C. Hinke, C. R. Hoffman, R. Hughes, E. Ideguchi, D. Jenkins, N. Kobayashi, Y. Kondo, R. Krücken, T. Le Bleis, J. Lee, G. Lee, A. Matta, S. Michimasa, T. Nakamura, S. Ota, M. Petri, T. Sako, H. Sakurai, S. Shimoura, K. Steiger, K. Takahashi, M. Takechi, Y. Togano, R. Winkler, and K. Yoneda

Phys. Rev. Lett. **109**, 182501/1-5 (2012)

PHY-13318-ME-2012

New Measurements of the Transverse Beam Asymmetry for Elastic Electron Scattering from Selected Nuclei

S. Abrahamyan *et al.* (HAPPEX and PREX Collaborations)

Phys. Rev. Lett. **109**, 192501/1-6 (2012)

PHY-13224-HI-2012

Identification of the  $2_{1,ms}^+$  Mixed-Symmetry State in  $^{136}\text{Ce}$

T. Ahn, G. Rainovski, N. Pietralla, L. Coquard, T. Möller, A. Costin, R. V. F. Janssens, C. J. Lister, M. P. Carpenter, and S. Zhu

Phys. Rev. C **86**, 014303/1-7 (2012)

PHY-13173-HI-2012

Lifetime of the  $2_1^+$  State in  $^{10}\text{C}$

E. A. McCutchan, C. J. Lister, Steven C. Pieper, R. B. Wiringa, D. Seweryniak, J. P. Greene, P. F. Bertone, M. P. Carpenter, C. J. Chiara, G. Gürdal, C. R. Hoffman, R. V. F. Janssens, T. L. Khoo, T. Lauritsen, and S. Zhu  
Phys. Rev. C **86**, 014312/1-8 (2012)

PHY-13289-HI-2012

Intermediate-Energy Coulomb Excitation of  $^{58,60,62}\text{Cr}$ : The Onset of Collectivity Toward  $N = 40$

T. Baugher, A. Gade, R. V. F. Janssens, S. M. Lenzi, D. Bazin, B. A. Brown, M. P. Carpenter, A. N. Deacon, S. J. Freeman, T. Glasmacher, G. F. Grinyer, F. G. Kondev, S. McDaniel, A. Poves, A. Ratkiewicz, E. A. McCutchan, D. K. Sharp, I. Stefanescu, K. A. Walsh, D. Weisshaar, and S. Zhu  
Phys. Rev. C **86**, 011305(R)/1-6 (2012)

PHY-13169-HI-2012

Near-Yrast Structure of Odd-A, Neutron-Rich Pr Isotopes

T. Malkiewicz, G. S. Simpson, W. Urban, J. Genevey, U. Köster, T. Materna, J. A. Pinston, M. Ramdhane, T. Rzaca-Urban, G. Thiamova, A. G. Smith, I. Ahmad and J. P. Greene  
Phys. Rev. C **85**, 044314/1-12 (2012)

PHY-13287-HI-2012

Band Structure of  $^{149}\text{Ce}$

W. Urban, T. Rzaca-Urban, A. Syntfeld-Kazuch, A. G. Smith, and I. Ahmad  
Phys. Rev. C **86**, 017301/1-4 (2012)

PHY-13264-TH-2012

Systematic Study of  $p$ -Shell Nuclei via Single-Nucleon Knockout Reactions

G. F. Grinyer, D. Bazin, A. Gade, J. A. Tostevin, P. Adrich, M. D. Bowen, B. A. Brown, C. M. Campbell, J. M. Cook, T. Glasmacher, S. McDaniel, A. Obertelli, K. Siwek, J. R. Terry, D. Weisshaar, and R. B. Wiringa  
Phys. Rev. C **86**, 024315/1-12 (2012)

PHY-13307-HI-2012

$\gamma$ -Ray Spectroscopy of Neutron-Deficient  $^{123}\text{Ce}$

J. F. Smith, L. J. Angus, E. S. Paul, C. J. Chiara, M. P. Carpenter, H. J. Chantler, P. T. W. Choy, C. N. Davids, M. Devlin, D. B. Fossan, S. J. Freeman, R. V. F. Janssens, N. S. Kelsall, T. Koike, D. R. LaFosse, D. G. Sarantites, D. Seweryniak, K. Starosta, R. Wadsworth, and A. N. Wilson  
Phys. Rev. C **86**, 034303/1-12 (2012)

PHY-13327-HI-2012

Precision Measurement of the  ${}^6\text{He}$  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. C **86**, 035506/1-10 (2012)

PHY-13245-HI-2012

Absolute  $\beta$ -To-Ground Band Transition Strengths in  ${}^{154}\text{Sm}$

T. Möller, N. Pietralla, G. Rainovski, T. Ahn, C. Bauer, M. P. Carpenter, L. Coquard, R. V. F. Janssens, J. Leske, C. J. Lister, E. A. McCutchan, O. Möller, D. Seweryniak, and S. Zhu  
Phys. Rev. C **86**, 031305(R)/1-5 (2012)

PHY-13347-HI-2012

Erratum: Intermediate-Energy Coulomb Excitation of  ${}^{58,60,62}\text{Cr}$ : The Onset of Collectivity Toward  $N = 40$  [Phys. Rev. C **86**, 011305(R) (2012)]

T. Baugher, A. Gade, R. V. F. Janssens, S. M. Lenzi, D. Bazin, B. A. Brown, M. P. Carpenter, A. N. Deacon, S. J. Freeman, T. Glasmacher, G. F. Grinyer, F. G. Kondev, S. McDaniel, A. Poves, A. Ratkiewicz, E. A. McCutchan, D. K. Sharp, I. Stefanescu, K. A. Walsh, D. Weisshaar, and S. Zhu  
Phys. Rev. C **86**, 049902(E)/1 (2012)

PHY-13315-HI-2012

Low-Spin States and the Non-Observation of a Proposed 2202-keV,  $0^+$  Isomer in  ${}^{68}\text{Ni}$

C. J. Chiara, R. Broda, W. B. Walters, R. V. F. Janssens, M. Albers, M. Alcorta, P. F. Bertone, M. P. Carpenter, C. R. Hoffman, T. Lauritsen, A. M. Rogers, D. Seweryniak, S. Zhu, F. G. Kondev, B. Fornal, W. Królas, J. Wrzesiński, N. Larson, S. N. Liddick, C. Prokop, S. Suchyta, H. M. David, and D. T. Doherty  
Phys. Rev. C **86**, 041304(R)/1-6 (2012)

PHY-13249-TH-2012

*Ab Initio* Calculations of Nuclear Widths via an Integral Relation

Kenneth M. Nollett  
Phys. Rev. C **86**, 044330/1-20 (2012)

PHY-13255-HI-2012

Level Structure of  ${}^{30}\text{S}$ : Implications for the Astrophysical  ${}^{29}\text{P}(p,\gamma){}^{30}\text{S}$  Reaction Rate in ONE Novae and X-Ray Bursts

G. Lotay, J. P. Wallace, P. J. Woods, D. Seweryniak, M. P. Carpenter, C. J. Chiara, D. T. Doherty, R. V. F. Janssens, T. Lauritsen, A. M. Rogers, and S. Zhu  
Phys. Rev. C **86**, 042801(R)/1-5 (2012)

PHY-13308-RI-2012

Development and Beam Test of a CW Radio Frequency Quadrupole Accelerator

P. N. Ostroumov, B. Mustapha, A. Barcikowski, C. Dickerson, A. A. Kolomiets, S. A. Kondrashev, Y. Luo, D. Paskvan, A. Perry, D. Schrage, S. I. Sharamentov, R. Sommer, W. Toter, and G. Zinkann  
Phys. Rev. ST Accel. Beams **15**, 110101 (2012)

PHY-13192-HI-2012

High-Spin Structure, *K* Isomers, and State Mixing in the Neutron-Rich Isotopes  $^{173}\text{Tm}$  and  $^{175}\text{Tm}$

R. O. Hughes, G. J. Lane, G. D. Dracoulis, A. P. Byrne, P. H. Nieminen, H. Watanabe, M. P. Carpenter, P. Chowdhury, R. V. F. Janssens, F. G. Kondev, T. Lauritsen, D. Seweryniak, and S. Zhu  
Phys. Rev. C **86**, 054314/1-22 (2012)

PHY-13223-HI-2012

Observation of New Microsecond Isomers Among Fission Products of 345 MeV/Nucleon  $^{238}\text{U}$

D. Kameda, et al.  
Phys. Rev. C **86**, 054319 (2012)

PHY-13276-HI-2012

Yrast Structure of  $^{206}\text{Bi}$ : Isomeric States and One-Proton-Particle, Three-Neutron-Hole Excitations

N. Cieplicka, K. H. Maier, B. Fornal, B. Szpak, R. V. F. Janssens, M. Alcorta, R. Broda, M. P. Carpenter, C. J. Chiara, C. R. Hoffman, B. P. Kay, F. G. Kondev, W. Królas, T. Lauritsen, C. J. Lister, E. A. McCutchan, T. Pawlat, A. M. Rogers, D. Seweryniak, N. Sharp, W. B. Walters, J. Wrzesiński, and S. Zhu  
Phys. Rev. C **86**, 054322/1-10 (2012)

PHY-13316-HI-2012

Candidate Superdeformed Band in  $^{28}\text{Si}$

D. G. Jenkins, C. J. Lister, M. P. Carpenter, P. Chowdhury, N. J. Hammond, R. V. F. Janssens, T. L. Khoo, T. Lauritsen, D. Seweryniak, T. Davinson, P. J. Woods, A. Jokinen, H. Penttila, F. Haas, and S. Courtin  
Phys. Rev. C **86**, 064308/1-5 (2012)

PHY-13340-HI-2012

Spectroscopic Study of the  $^{64,66,68}\text{Ni}$  Isotopes Populated in the  $^{64}\text{Ni} + ^{238}\text{U}$  Collisions

R. Broda, T. Pawlat, W. Królas, R. V. F. Janssens, S. Zhu, W. B. Walters, B. Fornal, C. J. Chiara, M. P. Carpenter, N. Hoteling, L. W. Iskra, F. G. Kondev, T. Lauritsen, D. Seweryniak, I. Stefanescu, X. Wang, and J. Wrzesiński  
Phys. Rev. C **86**, 064312/1-24 (2012)

PHY-13333-HI-2012

High-Spin Rotational Bands in  $^{123}\text{I}$

Purnima Singh, A. K. Singh, A. N. Wilson, I. Ragnarsson, H. Hübel, A. Bürger, M. P. Carpenter, S. Chmel, P. Fallon, G. B. Hagemann, B. Herskind, Hoa Ha, R. V. F. Janssens, K. Juhász, A. Kardan, T. L. Khoo, F. G. Kondev, A. Korichi, T. Lauritsen, B. M. Nyakó, J. Rogers, G. Sletten, J. Timár, and S. Zhu  
Phys. Rev. C **86**, 067305/1-4 (2012)

PHY-13279-HI-2012

Constraining the  $0\nu 2\beta$  Matrix Elements by Nuclear Structure Observables

S. J. Freeman and J. P. Schiffer  
J. Phys. G **39**, 124004/1-18 (2012)

PHY-13217-TH-2012

Spectrum of Hadrons with Strangeness

Chen Chen, Lei Chang, Craig D. Roberts, Shaolong Wan, and David J. Wilson  
Few-Body Syst. **53**, 293-326 (2012)

PHY-13179-TH-2012

Collective Perspective on Advances in Dyson-Schwinger Equation QCD

Adnan Bashir, Lei Chang, Ian C. Cloët, Bruno El-Bennich, Yu-xin Liu, Craig D. Roberts, and Peter C. Tandy  
Commun. Theor. Phys. **58**, 79-134 (2012)

PHY-13081-ME-2011

Transition Between Nuclear and Quark-Gluon Descriptions of Hadrons and Light Nuclei

R. J. Holt and R. Gilman  
Rep. Prog. Phys. **75**, 086301/1-24 (2012)

PHY-13288-HI-2012

Lifetime Measurements in  $^{182,186}\text{Pt}$

J. C. Walpe, U. Garg, S. Naguleswaran, J. Wei, W. Reviol, I. Ahmad, M. P. Carpenter, and T. L. Khoo  
Phys. Rev. C **85**, 057302/1-4 (2012)

PHY-12946-ME-2011

Hard Probes of Short-Range Nucleon-Nucleon Correlations

J. Arrington, D. W. Higinbotham, G. Rosner, and M. Sargsian  
Prog. Part. Nucl. Phys. **67**, 898-938 (2012)