**Physics Division Published Journal Articles, January-June 2014**

PHY-13709-ME-2014

Measurement of Parity Violation in Electron-Quark Scattering

D. Wang *et al.* (Jefferson Lab PVDIS Collaboration)

Nature **506**, 67-70 (2014)

PHY-13771-ME-2014

Spin and Parity Measurement of the Λ(1405) Baryon

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

Phys. Rev. Lett. **112**, 082004/1-6 (2014)

PHY-13589-HI-2013

Blurring the Boundaries: Decays of Multiparticle Isomers at the Proton Drip Line

R. J. Carroll, R. D. Page, D. T. Joss, J. Uusitalo, I. G. Darby, K. Andgren, B. Cederwall,

S. Eeckhaudt, T. Grahn, C. Gray-Jones, P. T. Greenlees, B. Hadinia, P. M. Jones, R. Julin,

S. Juutinen, M. Leino, A.-P. Leppänen, M. Nyman, D. O'Donnell, J. Pakarinen, P. Rahkila, M. Sandzelius, J. Sarén, C. Scholey, D. Seweryniak, and J. Simpson

Phys. Rev. Lett. **112**, 092501/1-5 (2014)

PHY-13628-TH-2013

Two-Body and Three-Body Contacts for Identical Bosons Near Unitarity

D. Hudson Smith, Eric Braaten, Daekyoung Kang, and Lucas Platter

Phys. Rev. Lett. **112**, 110402/1-5 (2014)

PHY-13677-HI-2014

Nuclear Structure Towards *N* = 40 60Ca: In Beam *γ*-Ray Spectroscopy of 58,60Ti

A. Gade, R. V. F. Janssens, D. Weisshaar, B. A. Brown, E. Lunderberg, M. Albers,

V. M. Bader, T. Baugher, D. Bazin, J. S. Berryman, C. M. Campbell, M. P. Carpenter,

C. J. Chiara, H. L. Crawford, M. Cromaz, U. Garg, C. R. Hoffman, F. G. Kondev, C. Langer, T. Lauritsen, I. Y. Lee, S. M. Lenzi, J. T. Matta, F. Nowacki, F. Recchia, K. Sieja,

S. R. Stroberg, J. A. Tostevin, S. J. Williams, K. Wimmer, and S. Zhu

Phys. Rev. Lett. **112**, 112503/1-5 (2014)

PHY-13629-ME-2013

JLab Measurement of the 4He Charge Form Factor at Large Momentum Transfers

A. Camsonne *et al.*

Phys. Rev. Lett. **112**, 132503/1-5 (2014)

PHY-13667-HI-2013

Direct Measurement of the 23Na(*α*,*p*)26Mg Reaction Cross Section at Energies Relevant for the Production of Galactic 26Al

S. Almaraz-Calderon, P. F. Bertone, M. Alcorta, M. Albers, C. M. Deibel, C. R. Hoffman,

C. L. Jiang, S. T. Marley, K. E. Rehm, and C. Ugalde

Phys. Rev. Lett. **112**, 152701/1-5 (2014)

PHY-13808-HI-2014

Measurement of the Survival Probabilities for Hot Fusion Reactions

R. Yanez, W. Loveland, L. Yao, J. S. Barrett, S. Zhu, B. B. Back, T. L. Khoo, M. Alcorta, and M. Albers

Phys. Rev. Lett. **112**, 152702/1-5 (2014)

PHY-13871-HI-2014

Shape Coexistence in the Neutron-Deficient Even-Even 182-188Hg Isotopes Studied Via Coulomb Excitations

N. Bree, K. Wrzosek-Lipska, A. Petts, A. Andreyev, B. Bastin, M. Bender, A. Blazhev,

B. Bruyneel, P. A. Butler, J. Butterworth, M. P. Carpenter, J. Cederkall, E. Clement,

T. E. Cocolios, A. Deacon, J. Diriken, A. Ekstrom, C. Fitzpatrick, L. M. Fraile, Ch. Fransen, S. J. Freeman, L. P. Gaffney, J. E. Garcia-Ramos, K. Geibel, R. Gernhauser, T. Grahn,

M. Guttormsen, B. Hadinia, K. Hadynska-Klek, M. Hass, P.-H. Heenen, R.-D. Herzberg,

H. Hess, K. Heyde, M. Huyse, O. Ivanov, D. G. Jenkins, R. Julin, N. Kesteloot, Th. Kroll,

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Phys. Rev. Lett. **112**, 162701/1-5 (2014)

PHY-13559-ME-2013

Separated Response Function Ratios in Exclusive, Forward *π*± Electroproduction

G. M. Huber *et al.* (Jefferson Lab *Fπ* Collaboration)

Phys. Rev. Lett. **112**, 182501/1-6 (2014)

PHY-13692-TH-2014

Neutral Weak-Current Two-Body Contributions in Inclusive Scattering from 12C

A. Lovato, S. Gandolfi, J. Carlson, Steven C. Pieper, and R. Schiavilla

Phys. Rev. Lett. **112**, 182502/1-5 (2014)

PHY-13690-HI-2014

Measurements of Fusion Reactions of Low-Intensity Radioactive Carbon Beams on 12C and Their Implications for the Understanding of X-Ray Bursts

P. F. F. Carnelli, S. Almaraz-Calderon, K. E. Rehm, M. Albers, M. Alcorta, P. F. Bertone,

B. DiGiovine, H. Esbensen, J. O. Fernández Niello, D. Henderson, C. L. Jiang, J. Lai,

S. T. Marley, O. Nusair, T. Palchan-Hazan, R. C. Pardo, M. Paul, and C. Ugalde

Phys. Rev. Lett. **112**, 192701/1-5 (2014)

PHY-13872-HI-2014

Observation of the *β*-Delayed *γ*-Proton Decay of 56Zn and Its Impact on the Gamow-Teller Strength Evaluation

S. E. A. Orrigo, B. Rubio, Y. Fujita, B. Blank, W. Gelletly, J. Agramunt, A. Algora,

P. Ascher, B. Bilgier, L. Caceres, R. B. Cakirli, H. Fujita, E. Ganioglu, M. Gerbaux,

J. Giovinazzo, S. Grevy, O. Kamalou, H. C. Kozer, L. Kucuk, T. Kurtukian-Nieto, F. Molina, L. Popescu, A. M. Rogers, G. Susoy, C. Stodel, T. Suzuki, A. Tamii, and J. C. Thomas

Phys. Rev. Lett. **112**, 222501/1-5 (2014)

PHY-13637-HI-2013

Test of the *πg*7/2 Subshell Closure at *Z* = 58

F. Naqvi, V. Werner, P. Petkov, T. Ahn, N. Cooper, G. Ilie, D. Radeck, C. Bernards,

M. P. Carpenter, C. J. Chiara, R. V. F. Janssens, F. G. Kondev, T. Lauritsen, D. Seweryniak, Ch. Stoyanov, and S. Zhu

Phys. Lett. **B728**, 303-307 (2014)

PHY-13662-TH-2013

Distribution Amplitudes of Light-Quark Mesons from Lattice QCD

Jorge Segovia, Lei Chang, Ian C. Clöet, Craig D. Roberts, Sebastian M. Schmidt, and

Hong-shi Zong

Phys. Lett. **B731**, 13-18 (2014)

PHY-13691-TH-2014

Ward-Green-Takahashi Identities and the Axial-Vector Vertex

Si-Xue Qin, Craig D. Roberts, and Sebastian M. Schmidt

Phys. Lett. **B733**, 202-208 (2014)

PHY-13689-HI-2014

Influence of Heavy-Ion Transfer on Fusion Reactions

C. L. Jiang, K. E. Rehm, B. B. Back, H. Esbensen, R. V. F. Janssens, A. M. Stefanini, and

G. Montagnoli

Phys. Rev. C **89**, 051603(R)/1-4 (2014)

PHY-13661-HI-2013

Neutron *s* States in Loosely Bound Nuclei

C. R. Hoffman, B. P. Kay, and J. P. Schiffer

Phys. Rev. C **89**, 061305(R)/1-5 (2014)

PHY-13613-TH-2013

Effective Field Theory for Proton Halo Nuclei

Emil Ryberg, Christian Forssén, H.-W. Hammer, and Lucas Platter

Phys. Rev. C **89**, 014325/1-6 (2014)

PHY-13610-TH-2013

Nucleon and Nucleon-Pair Momentum Distributions in *A* ≤ 12 Nuclei

R. B. Wiringa, R. Schiavilla, Steven C. Pieper, and J. Carlson

Phys. Rev. C **89**, 024305/1-9 (2014)

PHY-13664-HI-2013

Shape Coexistence in Neutron-Deficient Hg Isotopes Studied Via Lifetime Measurements in 184,186Hg and Two-State Mixing Calculations

L. P. Gaffney, M. Hackstein, R. D. Page, T. Grahn, M. Scheck, P. A. Butler, P. F. Bertone, N. Bree, R. J. Carroll, M. P. Carpenter, C. J. Chiara, A. Dewald, F. Filmer, C. Fransen,

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Phys. Rev. C **89**, 024307/1-8 (2014)

PHY-13656-TH-2013

Neutral-Current Interactions of Low-Energy Neutrinos in Dense Neutron Matter

Alessandro Lovato, Omar Benhar, Stefano Gandolfi, and Cristina Losa

Phys. Rev. C **89**, 025804/1-8 (2014)

PHY-13876-HI-2014

*β* Decay of 61,63V and Low-Energy Level Schemes of 61,63Cr

S. Suchyta, S. N. Liddick, C. J. Chiara, W. B. Walters, M. P. Carpenter, H. L. Crawford,

G. F. Grinyer, G. Gurdal, A. Klose, E. A. McCutchan, J. Pereira, and S. Zhu

Phys. Rev. C **89**, 034317/1-9 (2014)

PHY-13699-HI-2014

Higher-Seniority Excitations in Even Neutron-Rich Sn Isotopes

Ł. W. Iskra, R. Broda, R. V. F. Janssens, J. Wrzesiński, B. Szpak, C. J. Chiara,

M. P. Carpenter, B. Fornal, N. Hoteling, F. G. Kondev, W. Królas, T. Lauritsen, T. Pawłat, D. Seweryniak, I. Stefanescu, W. B. Walters, and S. Zhu

Phys. Rev. C **89**, 044324/1-21 (2014)

PHY-13707-TH-2014

Influence of Multiphonon Excitations and Transfer on the Fusion of Ca + Zr

H. Esbensen and A. M. Stefanini

Phys. Rev. C **89**, 044616/1-15 (2014)

PHY-13698-ME-2014

Measurement of the Structure Function of the Nearly Free Neutron Using Spectator Tagging in Inelastic 2H (*e*,*e*′*ps*)*X* Scattering with CLAS

S. Tkachenko *et al.* (CLAS Collaboration)

Phys. Rev. C **89**, 045206/1-25 (2014)

PHY-13682-HI-2014

Level Structure of 31S, from Low Excitation Energies to the Region of Interest for Hydrogen Burning in Novae through the 30*P*(*p*,*γ*)31S Reaction

D. T. Doherty, P. J. Woods, G. Lotay, D. Seweryniak, M. P. Carpenter, C. J. Chiara,

H. M. David, R. V. F. Janssens, L. Trache, and S. Zhu

Phys. Rev. C **89**, 045804/1-9 (2014)

PHY-13877-HI-2014

Quadrupole Collectivity in Island-of-Inversion Nuclei 28,30Ne and 34,36Mg

S. Michimasa, Y. Yanagisawa, K. Inafuku, N. Aoi, Z. Elekes, Zs, Fulop, Y. Ichikawa,

N. Iwasa, K. Kurita, M. Kurokawa, T. Machida, T. Motobayashi, T. Nakamura,

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T. Sumikama, S. Takeuchi, K. Tanaka, Y. Togano, K. Yamada, M. Yamaguchi, and

K. Yoneda

Phys. Rev. C **89**, 054307/1-9 (2014)

PHY-13674-ME-2013

*ϕ*-Meson Photoproduction on Hydrogen in the Neutral Decay Mode

H. Seraydaryan *et al.* (CLAS Collaboration)

Phys. Rev. C **89**, 055206/1-17 (2014)

PHY-13878-HI-2014

Coexisting Structures in 106Ru

S. Lalkovski, D. Ivanova, E. A. Stefanova, A. Korichi, P. Petkov, J. Kownacki, T. Kutsarova, A. Minkova, D. Bazzacco, M. Bergstrom, A. Gorgen, B. Herskind, H. Hubel, A. Jansen,

S. Kisyov, T. L. Khoo, F. G. Kondev, A. Lopez-Martens, Zs. Podolyak, G. Schonwasser, and O. Yordanov

Phys. Rev. C **89**, 064312/1-6 (2014)

PHY-13879-HI-2014

*β* and Isomeric Decay of 64V

S. Suchyta, S. N. Liddick, C. J. Chiara, W. B. Walters, M. P. Carpenter, H. L. Crawford,

G. F. Grinyer, G. Gurdal, A. Klose, E. A. McCutchan, J. Pereira, and S. Zhu

Phys. Rev. C **89**, 067303/1-6 (2014)

PHY-13770-ME-2014

Beam-Spin Asymmetries from Semi-Inclusive Pion Electroproduction

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

Phys. Rev. D **89**, 072011/1-15 (2014)

PHY-13680-TH-2014

Zero Mode in a Strongly Coupled Quark Gluon Plasma

Fei Gao, Si-Xue Qin, Yu-Xin Liu, Craig D. Roberts, and Sebastian M. Schmidt

Phys. Rev. D **89**, 076009/1-12 (2014)

PHY-13772-ME-2014

Reevaluation of the Parton Distribution of Strange Quarks in the Nucleon

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

Phys. Rev. D **89**, 097101/1-5 (2014)

PHY-13881-HI-2014

Bose-Fermi Symmetry in the Odd-Even Gold Isotopes

T. Thomas, J.-M. Regis, J. Jolie, S. Heinze, M. Albers, C. Bernards, C. Fransen, and

D. Radeck

Nucl. Phys. **A925**, 96-111 (2014)

PHY-13668-HI-2013

Astrophysics Experiments with Radioactive Beams at ATLAS

B. B. Back, J. A. Clark, R. C. Pardo, K. E. Rehm, and G. Savard

AIP Advances **4**, 041005/1-30 (2014)

PHY-13557-TH-2013

The Equation of State of Neutron Matter, Symmetry Energy and Neutron Star Structure

S. Gandolfi, J. Carlson, S. Reddy, A. W. Steiner, and R. B. Wiringa

Eur. Phys. J. A **50**, 1-11 (2014)

PHY-13600-TH-2013

Elastic and Transition Form Factors of the Δ(1232)

Jorge Segovia, Chen Chen, Ian C. Cloët, Craig D. Roberts, Sebastian M. Schmidt, and Shaolong Wan

Few-Body Syst. **55**, 1-33 (2014)

PHY-13777-ME-2014

Krypton-81 in Groundwater of the Culebra Dolomite Near the Waste Isolation Pilot Plant, New Mexico

Neil C. Sturchio, Kristopher L. Kuhlman, Reika Yokochi, Peter C. Probst, Wei Jiang,

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J. Contaminant Hydrology **160**, 12-20 (2014)

PHY-13685-HI-2014

Nuclear Theory and Science of the Facility for Rare Isotope Beams

A. B. Balantekin, J. Carlson, D. J. Dean, G. M. Fuller, R. J. Furnstahl, M. Hjorth-Jensen,

R. V. F. Janssens, Bao-An Li, W. Nazarewicz, F. M. Nunes, W. E. Ormand, S. Reddy, and

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Mod. Phys. Lett. A **29**, 1430010/1-21 (2014)

PHY-13462-RI-2013

Beam Characterization of New ATLAS CW RFQ

A. Perry, C. Dickerson, P. N. Ostroumov, and G. Zinkann

Nucl. Instrum. Methods **A735**, 163-168 (2014)

PHY-13644-ME-2013

Ion Current as a Precise Measure of the Loading Rate of a Magneto-Optical Trap

W. Jiang, K. Bailey, Z.-T. Lu, P. Mueller, T. P. O'Connor, and R. Purtschert

Opt. Lett. **39**, 409-412 (2014)

PHY-13776-ME-2014

Radiometric 81Kr Dating Identifies 120,000-Year-Old Ice at Taylor Glacier, Antarctica

Christo Buizert, Daniel Baggenstos, Wei Jiang, Roland Purtschert, Vasilii V. Petrenko, Zheng-Tian Lu, Peter Müller, Tanner Kuhl, James Lee, Jeffrey P. Severinghaus, and Edward J. Brook

Proceedings of the National Academy of Sciences **111**, 6876-6881 (2014)

PHY-13522-HI-2013

Recent Developments in Heavy-Ion Fusion Reactions

B. B. Back, H. Esbensen, C. L. Jiang, and K. E. Rehm

Rev. Mod. Phys. **86**, 317-360 (2014)

PHY-13679-ME-2014

Efficient Generation of Optical Sidebands at GHz with a High-Power Tapered Amplifier

J. C. Zappala, K. Bailey, Z.-T. Lu, T. P. O'Connor, and W. Jiang

Rev. Sci. Instr. **85**, 046104/1-3 (2014)