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Employment

Postdoctoral Researcher, Physics Division, Argonne National Laboratory	Nov. 2007–Oct. 2010
STFC Advanced Fellow, Department of Physics, University of York	Nov. 2010–Mar. 2013
Assistant Physicist, Physics Division, Argonne National Laboratory	Apr. 2013–present

Education

The University of Manchester, MPhys (Hons), Physics	2000–2004
The University of Manchester, PhD, Experimental nuclear physics	2004–2007

Professional Memberships

Member of the American Physical Society, USA

Research interests

Transfer reactions with stable and radioactive ion beams.

Evolution of nuclear shell structure.

Nuclear structure relevant to neutrinoless double beta decay.

Publications

Refereed journal articles

1. Spectroscopy of the odd-odd fp -shell nucleus ^{52}Sc from secondary fragmentation.
A. Gade, R. V. F. Janssens, D. Bazin, B. A. Brown, C. M. Campbell, M. P. Carpenter, J. M. Cook, A. N. Deacon, D.-C. Dinca, S. J. Freeman, T. Glasmacher, B. P. Kay, P. F. Mantica, W. F. Mueller, J. R. Terry, and S. Zhu.
[Phys. Rev. C **74**, 047302 \(2006\)](#). ([arXiv.org](#))
2. Cross-shell excitation in two-proton knockout: Structure of ^{52}Ca .
A. Gade, R. V. F. Janssens, D. Bazin, R. Broda, B. A. Brown, C. M. Campbell, M. P. Carpenter, J. M. Cook, A. N. Deacon, D.-C. Dinca, B. Fornal, S. J. Freeman, T. Glasmacher, P. G. Hansen, B. P. Kay, P. F. Mantica, W. F. Mueller, J. R. Terry, J. A. Tostevin, and S. Zhu.
[Phys. Rev. C **74**, 021302\(R\) \(2006\)](#). ([arXiv.org](#))
3. One-neutron knockout in the vicinity of the $N = 32$ sub-shell closure: $^9\text{Be}(^{57}\text{Cr}, ^{56}\text{Cr}+\gamma)\text{X}$.
A. Gade, R. V. F. Janssens, D. Bazin, B. A. Brown, C. M. Campbell, M. P. Carpenter, J. M. Cook, A. N. Deacon, D.-C. Dinca, S. J. Freeman, T. Glasmacher, M. Horoi, B. P. Kay, P. F. Mantica, W. F. Mueller, J. R. Terry, J. A. Tostevin, and S. Zhu.
[Phys. Rev. C **74**, 047303 \(2006\)](#). ([arXiv.org](#))
4. Pair correlations in nuclei involved in neutrinoless double β decay: ^{76}Ge and ^{76}Se .
S. J. Freeman, J. P. Schiffer, A. C. C. Villari, J. A. Clark, C. Deibel, S. Gros, A. Heinz, D. Hirata, C. L. Jiang, B. P. Kay, P. D. Parker, J. Qian, K. E. Rehm, X. D. Tang, V. Werner, and C. Wrede.
[Phys. Rev. C **75**, 051301\(R\) \(2007\)](#). ([arXiv.org](#))

5. One-particle excitations outside the ^{54}Ti semi-magic core: The ^{55}V and ^{55}Ti yrast structures.
S. Zhu, R. V. F. Janssens, B. Fornal, S. J. Freeman, M. Honma, R. Broda, M. P. Carpenter, A. N. Deacon, B. P. Kay, F. G. Kondev, W. Królas, J. Kozemczak, A. Larabee, T. Lauritsen, S. N. Liddick, C. J. Lister, P. F. Mantica, T. Otsuka, T. Pawlat, A. Robinson, D. Seweryniak, J. F. Smith, D. Steppenbeck, B. E. Tomlin, J. Wrzesiński, and X. Wang.
[Phys. Lett. B **650**, 135 \(2007\)](#).
6. High- j single-particle neutron states outside the $N = 82$ core.
B. P. Kay, S. J. Freeman, J. P. Schiffer, J. A. Clark, C. Deibel, A. Heinz, A. Parikh, and C. Wrede.
[Phys. Lett. B **658**, 216 \(2008\)](#). ([arXiv.org](#))
7. Nuclear structure relevant to neutrinoless double β decay: ^{76}Ge and ^{76}Se .
J. P. Schiffer, S. J. Freeman, J. A. Clark, C. Deibel, C. R. Fitzpatrick, S. Gros, A. Heinz, D. Hirata, C. L. Jiang, B. P. Kay, A. Parikh, P. D. Parker, K. E. Rehm, A. C. C. Villari, V. Werner, and C. Wrede.
[Phys. Rev. Lett. **100**, 112501 \(2008\)](#). ([arXiv.org](#))
8. 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. Okumura, K. E. Rehm, Y. Sakemi, Y. Shimizu, H. Shimoda, K. Suda, Y. Tameshige, A. Tamii, and C. Wrede.
[Phys. Rev. C **79**, 021301\(R\) \(2009\)](#). ([arXiv.org](#))
9. Identification of the $g_{9/2}$ -proton bands in the neutron-rich $^{71,73,75,77}\text{Ga}$ 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. Królas, T. Lauritsen, C. J. Lister, E. A. McCutchan, T. Pawlat, D. Seweryniak, J. R. Stone, N. J. Stone, and J. Wrzesiński.
[Phys. Rev. C **79**, 064302 \(2009\)](#).
10. Properties of excited states in ^{77}Ge .
B. P. Kay, C. J. Chiara, J. P. Schiffer, F. G. Kondev, S. Zhu, M. P. Carpenter, R. V. F. Janssens, T. Lauritsen, C. J. Lister, E. A. McCutchan, D. Seweryniak, and I. Stefanescu.
[Phys. Rev. C **80**, 017301 \(2009\)](#).
11. High-lying, non-yrast shell structure in ^{52}Ti .
S. Zhu, R. V. F. Janssens, S. J. Freeman, M. Honma, R. Broda, M. P. Carpenter, A. N. Deacon, E. Jackson, B. P. Kay, T. Lauritsen, C. J. Lister, P. F. Mantica, T. Otsuka, D. Seweryniak, J. F. Smith, D. Steppenbeck, and X. Wang.
[Phys. Rev. C **80**, 024318 \(2009\)](#).
12. Population of positive-parity states in ^{53}Sc through one-proton knockout.
S. McDaniel, A. Gade, R. V. F. Janssens, D. Bazin, B. A. Brown, C. M. Campbell, M. P. Carpenter, J. M. Cook, A. N. Deacon, D.-C. Dinca, S. J. Freeman, T. Glasmacher, P. G. Hansen, B. P. Kay, P. F. Mantica, W. F. Mueller, J. R. Terry, J. A. Tostevin, and S. Zhu.
[Phys. Rev. C **81**, 024301 \(2010\)](#).
13. First Experiment with HELIOS: The Structure of ^{13}B .
B. B. Back, S. I. Baker, B. A. Brown, C. M. Deibel, S. J. Freeman, B. J. DiGiovine, C. R. Hoffman, B. P. Kay, H. Y. Lee, J. C. Lighthall, S. T. Marley, R. C. Pardo, K. E. Rehm, J. P. Schiffer, D. V. Shetty, A. W. Vann, J. Winkelbauer, and A. H. Wuosmaa.
[Phys. Rev. Lett. **104**, 132501 \(2010\)](#).
14. Collectivity at $N = 40$ in neutron-rich ^{64}Cr .
A. Gade, R. V. F. Janssens, T. Baugher, D. Bazin, B. A. Brown, M. P. Carpenter, C. J. Chiara, A. N. Deacon, S. J. Freeman, G. F. Grinyer, C. R. Hoffman, B. P. Kay, F. G. Kondev, T. Lauritsen, S. McDaniel, K. Meierbachtol, A. Ratkiewicz, S. R. Stroberg, K. A. Walsh, D. Weisshaar,

- R. Winkler, and S. Zhu.
[Phys. Rev. C **81**, 051304\(R\) \(2010\).](#)
15. β decay and isomeric properties of neutron-rich Ca and Sc isotopes.
 H. L. Crawford, R. V. F. Janssens, P. F. Mantica, J. S. Berryman, R. Broda, M. P. Carpenter, N. Cieplieka, B. Fornal, G. F. Grinyer, N. Hoteling, [B. P. Kay](#), T. Lauritsen, K. Minamisono, I. Stefanescu, J. B. Stoker, W. B. Walters, and S. Zhu.
[Phys. Rev. C **82**, 014311 \(2010\).](#) ([arXiv.org](#))
 16. Pair correlations in the neutrinoless double- β decay candidate ^{130}Te .
 T. Bloxham, [B. P. Kay](#), J. P. Schiffer, J. A. Clark, C. M. Deibel, S. J. Freeman, S. J. Freedman, A. M. Howard, S. A. McAllister, P. D. Parker, D. K. Sharp, and J. S. Thomas.
[Phys. Rev. C **82**, 027308 \(2010\).](#)
 17. Cross-shell excitations near the “island of inversion”: Structure of ^{30}Mg .
 A. N. Deacon, J. F. Smith, S. J. Freeman, R. V. F. Janssens, M. P. Carpenter, B. Hadinia, C. R. Hoffman, [B. P. Kay](#), T. Lauritsen, C. J. Lister, D. ODonnell, J. Ollier, T. Otsuka, D. Seweryniak, K.-M. Spohr, D. Steppenbeck, S. L. Tabor, V. Tripathi, Y. Utsuno, P. T. Wady, and S. Zhu.
[Phys. Rev. C **82**, 034305 \(2010\).](#)
 18. $^{15}\text{C}(d,p)^{16}\text{C}$ Reaction and Exotic Behavior in ^{16}C .
 A. H. Wuosmaa, B. B. Back, S. Baker, B. A. Brown, C. M. Deibel, P. Fallon, C. R. Hoffman, [B. P. Kay](#), H. Y. Lee, J. C. Lighthall, A. O. Macchiavelli, S. T. Marley, R. C. Pardo, K. E. Rehm, J. P. Schiffer, D. V. Shetty, and M. Wiedeking.
[Phys. Rev. Lett. **105**, 132501 \(2010\).](#)
 19. Commissioning of the HELIOS spectrometer.
 J. C. Lighthall, B. B. Back, S. I. Baker, S. J. Freeman, H. Y. Lee, [B. P. Kay](#), S. T. Marley, K. E. Rehm, J. E. Rohrer, J. P. Schiffer, D. V. Shetty, A. W. Vann, J. R. Winkelbauer, and A. H. Wuosmaa.
[Nucl. Instrum. Methods Phys. Res. A **622**, 97 \(2010\).](#)
 20. Cross-shell excitations in ^{30}Al and ^{30}Si at high spin.
 D. Steppenbeck, A. N. Deacon, S. J. Freeman, R. V. F. Janssens, M. P. Carpenter, C. R. Hoffman, [B. P. Kay](#), T. Lauritsen, C. J. Lister, D. ODonnell, J. Ollier, D. Seweryniak, J. F. Smith, K.-M. Spohr, S. L. Tabor, V. Tripathi, P. T. Wady, and S. Zhu.
[Nucl. Phys. A **847**, 149 \(2010\).](#)
 21. Single-particle and collective structures in ^{55}Cr and ^{55}V .
 A. N. Deacon, D. Steppenbeck, S. Zhu, S. J. Freeman, R. V. F. Janssens, M. P. Carpenter, B. Fornal, M. Honma, [B. P. Kay](#), F. G. Kondev, J. Kozemczak, A. Larabee, T. Lauritsen, C. J. Lister, A. P. Robinson, D. Seweryniak, J. F. Smith, Y. Sun, X. Wang, F. R. Xu, and Y.-C. Yang.
[Phys. Rev. C **83**, 064305 \(2011\).](#)
 22. Single-neutron energies outside ^{136}Xe .
[B. P. Kay](#), J. P. Schiffer, S. J. Freeman, C. R. Hoffman, B. B. Back, S. I. Baker, S. Bedoor, T. Bloxham, J. A. Clark, C. M. Deibel, A. M. Howard, J. C. Lighthall, S. T. Marley, K. E. Rehm, D. K. Sharp, D. V. Shetty, J. S. Thomas, and A. H. Wuosmaa.
[Phys. Rev. C **84**, 024325 \(2011\).](#)
 23. Seniority, collectivity, and $B(E2)$ enhancement in ^{72}Ni .
 C. J. Chiara, W. B. Walters, I. Stefanescu, M. Alcorta, M. P. Carpenter, B. Fornal, G. Gürdal, C. R. Hoffman, R. V. F. Janssens, [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, J. Wrzesiński, and S. Zhu.
[Phys. Rev. C **84**, 037304 \(2011\).](#)

24. First measurement of the $^{33}\text{Cl}(p,\alpha)^{30}\text{S}$ reaction.
C. M. Deibel, K. E. Rehm, J. M. Figueira, J. P. Greene, C. L. Jiang, B. P. Kay, H. Y. Lee, J. C. Lighthall, S. T. Marley, R. C. Pardo, N. Patel, C. Ugalde, A. Woodward, A. H. Wuosmaa, and G. Zinkann.
[Phys. Rev. C **84**, 045802 \(2011\)](#).
25. 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 \(2012\)](#).
26. 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 \(2012\)](#).
27. γ -ray spectroscopy of the odd-odd $N = Z + 2$ deformed proton emitter ^{112}Cs .
P. T. Wady, J. F. Smith, E. S. Paul, B. Hadinia, C. J. Chiara, M. P. Carpenter, C. N. Davids, A. N. Deacon, S. J. Freeman, A. N. Grint, R. V. F. Janssens, B. P. Kay, T. Lauritsen, C. J. Lister, B. M. McGuirk, M. Petri, A. P. Robinson, D. Seweryniak, D. Steppenbeck, and S. Zhu.
[Phys. Rev. C **85**, 034329 \(2012\)](#).
28. Experimental 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. Rojas, D. Santiago-Gonzalez, D. K. Sharp, D. V. Shetty, J. S. Thomas, I. Wiedenhöver, and A. H. Wuosmaa.
[Phys. Rev. C **85**, 054318 \(2012\)](#).
29. Neutron pair correlations in $A = 100$ nuclei involved in neutrinoless double- β decay.
J. S. Thomas, S. J. Freeman, C. M. Deibel, T. Faestermann, R. Hertzenberger, B. P. Kay, S. McAllister, A. J. Mitchell, J. P. Schiffer, D. K. Sharp, and H.-F. Wirth.
[Phys. Rev. C **86**, 047304 \(2012\)](#). ([arXiv.org](#))
30. Yrast structure of ^{206}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 \(2012\)](#).
31. New AMS method to measure the atom ratio $^{146}\text{Sm}/^{147}\text{Sm}$ for a half-life determination of ^{146}Sm .
N. Kinoshita, M. Paul, M. Alcorta, M. Bowers, P. Collon, C. M. Deibel, B. DiGiovine, S. Goriely, J. P. Greene, D. J. Henderson, C. L. Jiang, Y. Kashiv, B. P. Kay, H. Y. Lee, S. T. Marley, T. Nakanishi, R. C. Pardo, N. Patel, K. E. Rehm, D. Robertson, R. Scott, C. Schmitt, X. D. Tang, C. Ugalde, and R. Vondrasek.
[Nucl. Instrum. Methods Phys. Res. B **294**, 143 \(2013\)](#).
32. 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 \(2013\)](#).
33. 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\(R\) \(2013\)](#).
34. 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 \(2013\)](#).
35. 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\(R\) \(2013\)](#).
36. 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\(R\) \(2013\)](#).
37. Quenching of Cross Sections in Nucleon Transfer Reactions.
B. P. Kay, J. P. Schiffer, and S. J. Freeman.
[Phys. Rev. Lett. **111**, 042502 \(2013\)](#). ([arXiv.org](#))
38. Single-neutron excitations in ^{18}N .
C. R. Hoffman, M. Albers, M. Alcorta, S. Almaraz-Calderon, B. B. Back, S. I. Baker, S. Bedoor, P. F. Bertone, B. P. Kay, J. C. Lighthall, T. Palchan, R. C. Pardo, G. Perdikakis, K. E. Rehm, A. M. Rogers, D. Santiago-Gonzalez, Cenxi Yuan, and J. P. Schiffer.
[Phys. Rev. C **88**, 044317 \(2013\)](#)
39. Upper limit on two-photon emission branch for the $0_2^+ \rightarrow 0_2^+$ transition in ^{98}Mo .
J. Henderson, D. G. Jenkins, P. J. Davies, M. Alcorta, M. P. Carpenter, B. P. Kay, C. J. Lister, and S. Zhu.
[Phys. Rev. C **89**, 064307 \(2014\)](#).
40. Neutron s states in loosely bound nuclei
C. R. Hoffman, B. P. Kay, and J. P. Schiffer.
[Phys. Rev. C. **89**, 061305\(R\) \(2014\)](#). ([arXiv.org](#))
41. Fission Barrier of Superheavy Nuclei and Persistence of Shell Effects at High Spin: Cases of ^{254}No and ^{220}Th .
Greg Henning, T. L. Khoo, A. Lopez-Martens, D. Seweryniak, M. Alcorta, M. Asai, B. B. Back, P. F. Bertone, D. Boilley, M. P. Carpenter, C. J. Chiara, P. Chowdhury, B. Gall, P. T. Greenlees, G. Gurdal, K. Hauschild, A. Heinz, C. R. Hoffman, R. V. F. Janssens, A. V. Karpov, B. P. Kay, F. G. Kondev, S. Lakshmi, T. Lauritsen, C. J. Lister, E. A. McCutchan, C. Nair, J. Picot, D. Potterveld, P. Reiter, A. M. Rogers, N. Rowley, and S. Zhu.
[Phys. Rev. Lett. **113**, 262505 \(2014\)](#).
42. In-beam γ -ray spectroscopy of ^{63}Mn .
T. Baugher, A. Gade, R. V. F. Janssens, S. M. Lenzi, D. Bazin, M. P. Carpenter, C. J. Chiara, A. N. Deacon, S. J. Freeman, G. F. Grinyer, C. R. Hoffman, B. P. Kay, F. G. Kondev, T. Lauritsen, S. McDaniel, K. C. Meierbachtol, A. Ratkiewicz, S. R. Stroberg, K. A. Walsh, D. Weisshaar, and S. Zhu.
[Phys. Rev. C **93**, 014313 \(2016\)](#).

43. Shape coexistence and the role of axial asymmetry in ^{72}Ge .
A. D. Ayangeakaa, R. V. F. Janssens, C. Y. Wu, J. M. Allmond, J. L. Wood, S. Zhu, M. Albers, S. Almaraz-Calderon, B. Bucher, M. P. Carpenter, C. J. Chiara, D. Cline, H. L. Crawford, H. M. David, J. Harker, A. B. Hayes, C. R. Hoffman, B. P. Kay, K. Kolos, A. Korichi, T. Lauritsen, A. O. Macchiavelli, A. Richard, D. Seweryniak, and A. Wiens.
Phys. Lett. B **754**, 254 (2016). (arXiv.)
44. Direct Evidence of Octupole Deformation in Neutron-Rich ^{144}Ba .
B. Bucher, S. Zhu, C. Y. Wu, R. V. F. Janssens, D. Cline, A. B. Hayes, M. Albers, A. D. Ayangeakaa, P. A. Butler, C. M. Campbell, M. P. Carpenter, C. J. Chiara, J. A. Clark, H. L. Crawford, M. Cromaz, H. M. David, C. Dickerson, E. T. Gregor, J. Harker, C. R. Hoffman, B. P. Kay, F. G. Kondev, A. Korichi, T. Lauritsen, A. O. Macchiavelli, R. C. Pardo, A. Richard, M. A. Riley, G. Savard, M. Scheck, D. Seweryniak, M. K. Smith, R. Vondrasek, and A. Wiens.
Phys. Rev. Lett. **116**, 112503 (2016). (arXiv.)
45. Change of nuclear configurations in the neutrinoless double- β decay of $^{130}\text{Te} \rightarrow ^{130}\text{Xe}$ and $^{136}\text{Xe} \rightarrow ^{136}\text{Ba}$.
J. P. Entwisle, B. P. Kay, A. Tamii, S. Adachi, N. Aoi, J. A. Clark, S. J. Freeman, H. Fujita, Y. Fujita, T. Furuno, T. Hashimoto, C. R. Hoffman, E. Ideguchi, T. Ito, C. Iwamoto, T. Kawabata, B. Liu, M. Miura, H. J. Ong, J. P. Schiffer, D. K. Sharp, G. Süsoy, T. Suzuki, S. V. Szewc, M. Takaki, M. Tsumura, and T. Yamamoto.
Phys. Rev. C **93**, 064312 (2016). (arXiv.)
46. The ordering of the $0d_{5/2}$ and $1s_{1/2}$ proton levels in light nuclei.
C. R. Hoffman, B. P. Kay, and J. P. Schiffer.
Phys. Rev. C **94**, 024330 (2016). (arXiv.)
47. Population and decay of a $K^\pi = 8^-$ two-quasineutron isomer in ^{244}Pu .
S. S. Hota, S. K. Tandel, P. Chowdhury, I. Ahmad, M. P. Carpenter, C. J. Chiara, J. P. Greene, C. R. Hoffman, E. G. Jackson, R. V. F. Janssens, B. P. Kay, T. L. Khoo, F. G. Kondev, S. Lakshmi, S. Lalkovski, T. Lauritsen, C. J. Lister, E. A. McCutchan, K. Moran, D. Peterson, U. Shirwadkar, D. Seweryniak, I. Stefanescu, Y. Toh, and S. Zhu.
Phys. Rev. C **94**, 021303(R) (2016).
48. Study of the Astrophysically Important $^{23}\text{Na}(\alpha,p)^{26}\text{Mg}$ and $^{23}\text{Na}(\alpha,n)^{26}\text{Al}$ reactions.
M. L. Avila, K. E. Rehm, S. Almaraz-Calderon, A. D. Ayangeakaa, C. Dickerson, C. R. Hoffman, C. L. Jiang, B. P. Kay, J. Lai, O. Nusair, R. C. Pardo, D. Santiago-Gonzalez, R. Talwar, and C. Ugalde.
Submitted as a Regular Article in Physical Review C (Placed on the arXiv on August 10, 2016).
49. Study of (α,p) and (α,n) reactions with a multi-sampling ionization chamber.
M. L. Avila, K. E. Rehm, S. Almaraz-Calderon, A. D. Ayangeakaa, C. Dickerson, C. R. Hoffman, C. L. Jiang, B. P. Kay, J. Lai, O. Nusair, R. C. Pardo, D. Santiago-Gonzalez, R. Talwar, and C. Ugalde.
To be submitted to Nuclear Instruments and Methods (Placed on the arXiv on August 10, 2016).
50. Rearrangement of valence neutrons in the neutrinoless double- β decay of ^{136}Xe .
S. V. Szewc, B. P. Kay, T. E. Cocolios, J. P. Entwisle, S. J. Freeman, L. P. Gaffney, V. Guimarães, F. Hammache, P. P. McKee, E. Parr, C. Portail, J. P. Schiffer, N. de Séreville, D. K. Sharp, J. F. Smith, and I. Stefan.
Phys. Rev. C **XX**, YYYYYY (2016). (arXiv.) (Submitted on September 8, 2016.)

Conference proceedings as first author

1. Study of valence neutrons in ^{136}Xe with HELIOS.
B. P. Kay, J. P. Schiffer, S. J. Freeman, B. B. Back, S. Bedoor, S. I. Baker, T. Bloxham,

- J. A. Clark, C. M. Deibel, C. R. Hoffman, A. M. Howard, J. C. Lighthall, S. T. Marley, K. E. Rehm, D. K. Sharp, D. V. Shetty, J. S. Thomas, and A. H. Wuosmaa.
[J. Phys.: Conf. Ser. **312**, 092034 \(2011\).](#)
2. HELIOS progress and possibilities.
 B. P. Kay, M. Alcorta, B. B. Back, S. I. Baker, S. Bedoor, T. Bloxham, J. A. Clark, C. M. Deibel, S. J. Freeman, C. R. Hoffman, A. M. Howard, J. C. Lighthall, S. T. Marley, A. J. Mitchell, K. E. Rehm, J. P. Schiffer, D. K. Sharp, D. V. Shetty, J. S. Thomas, A. H. Wuosmaa, and S. Zhu.
[J. Phys.: Conf. Ser. **381**, 012095 \(2012\).](#)
 3. Transfer reactions and the structure of neutron-rich nuclei.
 B. P. Kay for the HELIOS collaboration.
[Acta Phys. Pol. B. Proc. Suppl. **44**, 349 \(2013\).](#)
 4. Nuclear structure relevant to neutrinoless double beta decay candidate ^{130}Te and other recent results.
 B. P. Kay
[AIP Conf. Proc. **1572**, 65 \(2013\).](#)

Other papers, special topics, major proposals, magazine articles, etc.

1. Storage ring facility at HIE-ISOLDE – Technical design report.
 M. Grieser *et al.*, (100+ authors).
[Eur. Phys. J. Special Topics **207**, 1 \(2012\).](#)
2. Nuclear Structure of Light Nuclei Near Threshold.
 Calem R. Hoffman and Benjamin P. Kay.
 Feature Article in [Nuclear Physics News International, Volume 24, Issue 4, page 16-21, October-December 2014.](#)
3. Conference report on Direct Reactions with Exotic Beams 2016.
 Rituparna Kanungo, Benjamin Kay, and Petr Navratil
 Article in [Nuclear Physics News International, Volume XX, Issue 4, page YY-ZZ, October-December 2016.](#)

Research grants and funding

Research council

Holder of a STFC Advanced Fellowship from November 2010-March 2013.

Reviewing and refereeing

Referee for the American Physical Society (2012-present): Physical Review Letters, Physical Review C.

Referee for Physics Letters B (2012-present). [*Named among the “Most Valued Reviewers of 2014” by Prof. Geesaman, Editor of Physics Letters B.*]

Talks

Invited research seminars and conference presentations

1. Is spin-orbit strength changing with neutron excess? The Institute of Physics Nuclear Physics Conference, University of York, UK (March 2006).
2. Investigating nuclear structure relevant to neutrinoless double β decay: ^{76}Ge and ^{76}Se . Oak Ridge National Laboratory, Physics Division Seminar, USA (September 2008).

3. Tracking the evolution of single-particle strength. Physics Division Seminar, Argonne National Laboratory, USA (October 2009).
4. Probing nuclear structure relevant to neutrinoless double beta decay candidates ^{76}Ge and ^{130}Te . National Superconducting Cyclotron Facility, Seminar, USA (September 2010).
5. HELIOS – a novel spectrometer for transfer reactions in inverse kinematics. University of Liverpool, Physics Seminar, UK (May 2011).
6. Experimental Input to Determine Nuclear Matrix Elements. Half-day IOP meeting on Neutrinoless Double Beta Decay, University College London, UK (October 2011).
7. HELIOS and the radioactive ion beam programme at ANL. CEA-Saclay, IRFU/Service de Physique Nucléaire, France (Jan 2012).
8. Evolution of single-particle energies – studies with stable and radioactive beams. Physics Division Seminar, Argonne National Laboratory, USA (May 2012).
9. HELIOS – a novel spectrometer for transfer reactions in inverse kinematics. Research Center for Nuclear Physics Seminar, Osaka University, Japan (July 2012).
10. Transfer reactions and the structure of neutron-rich nuclei. Zakopane Conference on Nuclear Physics, Poland (August 2012).
11. Single-particle properties of $0\nu 2\beta$ candidates. Towards a resolution of the double beta decay problem. Trento, Italy (September 2012).
12. Probing nuclear structure through single-nucleon transfer. Physics Division Colloquium, Argonne National Laboratory, USA (December 2012).
13. Nuclear structure relevant to neutrinoless double- β decay candidate ^{130}Te . MEDEX-13, Prague, Czech Republic (June 2013).
14. Using transfer reactions to probe nuclear structure properties relevant to neutrinoless double beta decay. Notre Dame, USA (September 2013).
15. Nuclear structure foundations of neutrinoless double beta decay. High Energy Physics Lunch Seminar, University of Chicago, USA (March 2015).
16. Nuclear-structure data relevant to $0\nu 2\beta$ -decay matrix elements. 2015 Fall Meeting of the American Physical Society Division of Nuclear Physics, Santa Fe, USA (October 2015)
17. The Microscopic Anatomy of $0\nu 2\beta$ -Decay Candidates. High-resolution Spectroscopy and Tensor interactions (HST) 2015, Osaka University, Japan (November 2015).
18. Getting to Known the Nuclei Involved in Neutrinoless Double Beta Decay. Physics Division Colloquium, Argonne National Laboratory, USA (February 2016). [Abstract](#).
19. The structure of nuclei involved in neutrinoless double beta decay, Annual Institute of Physics Nuclear Physics Conference 2015, University of Liverpool, UK (March 30-April 1 2016).

Contributed research seminars and conference presentations

1. Is spin-orbit strength changing with neutron excess? The Institute of Physics Nuclear Physics Summer School, University of Chester, UK (September 2005).
2. Studying the evolution of nuclear shell structure using single-particle transfer reactions. Graduate Seminar, University of Manchester, UK (January 2007).
3. Studying single-particle levels in $N = 82$ isotones using the $(\alpha, ^3\text{He})$ reaction. The Institute of Physics Nuclear and Particle Physics Divisional Conference, University of Surrey, UK (April 2007).
4. Single-particle states outside the $N = 82$ core. American Physical Society, April Meeting, St. Louis, USA (April 2008).
5. Investigating nuclear structure relevant to neutrinoless double β decay: ^{76}Ge and ^{76}Se . Nuclear Structure 2008 Conference, Michigan State University, USA (June 2008).

6. Neutrinoless double beta decay: the nuclear structure ingredient. Argonne National Laboratory, Postdoctoral Research Symposium, USA (September 2008).
7. Investigating nuclear structure relevant to neutrinoless double β decay: ^{76}Ge and ^{76}Se . American Physical Society, Division of Nuclear Physics Annual Meeting, USA (October 2008).
8. Neutrinoless double beta decay: the nuclear structure ingredient. Argonne National Laboratory, Postdoctoral Society of Argonne Seminar, USA (December 2008).
9. Measuring absolute cross sections in HELIOS. American Physical Society, April Meeting, Washington DC, USA (February 2010).
10. Study of valence neutrons in $^{130,136}\text{Xe}$ with HELIOS. International Nuclear Physics Conference, Canada (July 2010).
11. Single-neutron adding on $^{130,136}\text{Xe}$ using HELIOS. Nuclear Structure 2010 Conference, Lawrence Berkeley National Laboratory, USA (August 2010).
12. Exploring nuclear structure with HELIOS. Student Lunch Seminar, Argonne National Laboratory, USA (August 2010).
13. Development and implementation of the HELIOS spectrometer. Argonne National Laboratory, Postdoctoral Research Symposium, USA (September 2010).
14. "Status of HELIOS" and "The study of single-particle structure near doubly-magic ^{132}Sn ". SPIRAL2 week, France (January 2010).
15. Possible use of a recoil separator in conjunction with HELIOS at HIE-ISOLDE. HIE-ISOLDE spectrometer workshop, Sweden (March 2010).
16. HELIOS – a novel spectrometer for transfer reactions in inverse kinematics. University of York, Physics Seminar, UK (May 2011).
17. Transfer reactions for neutrinoless double beta decay. Recent Developments in Transfer and Knockout Reactions, Italy (May 2011).
18. HELIOS – progress and possibilities. The Rutherford Centennial Conference, University of Manchester, UK (August 2011).
19. First use of HELIOS at forward laboratory angles. 2011 Fall Meeting of the APS Division of Nuclear Physics, USA (October 2011).
20. Nuclear structure relevant to neutrinoless double-beta decay: the valence neutrons in ^{130}Te and ^{130}Xe . The Institute of Physics Nuclear Physics Conference, University of Brighton, UK (April 2012).
21. Neutrinoless double beta decay - the nuclear structure ingredient. University of York, Physics Seminar (April 2012).
22. Neutrinoless double beta decay: the nuclear-structure ingredient. Student Lunch Seminar, Argonne National Laboratory, USA (June 2013).
23. Quenching of cross sections in nucleon transfer reactions. APS Division of Nuclear Physics 2013, Virginia, USA (October 2013).

Outreach talks

Big questions about small things: studying the nucleus at ATLAS. Student Summer Seminar for the Division of Educational Programs, Argonne National Laboratory, USA (June 2009).

Other roles / responsibilities

Physics Division Colloquium Committee, 2013-2014

Physics Division Heavy Ion Discussion Chair, 2014-2015

Physics Division Student Lunch Seminar Chair, 2015-present

Physics Division Radiation Safety Committee, 2014-present

Co-organizer of the “TRIUMF Double-Beta Decay Workshop, Vancouver, May 11-13, 2016.
[TRIUMF Double-Beta Decay Workshop](#).

Co-chair, Direct Reactions with Exotic Beams 2016 (DREB 2016), Halifax, Canada, July 11-15
conferences.triumf.ca/DREB2016/index.html

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