

# BENJAMIN P. CRIDER

## CONTACT INFORMATION

Assistant Professor

Department of Physics & Astronomy

Mississippi State University

244 Hilbun Hall

Mississippi State, MS 39762-5167

*email* [bpc135@msstate.edu](mailto:bpc135@msstate.edu)

*phone* (cell) (859) 361 1397 · (work) (662) 325 2923

## RESEARCH INTERESTS

My research focuses on low-energy nuclear structure studies of shape coexistence using fast-timing techniques for measuring the half-lives of nuclear states and high-energy-resolution detector arrays for gamma-ray branching ratio measurements. These results enable the determination of transition strengths that can be compared to theoretical calculations, providing direct feedback to the validity of the models.

## EDUCATION

*Ph. D., Physics*

2009-2014 University of Kentucky

Dissertation: Nuclear Structure Relevant to Double-beta Decay: Studies of  $^{76}\text{Ge}$  and  $^{76}\text{Se}$  using Inelastic Neutron Scattering  
Advisor: Prof. Steven W. Yates

*M.S., Physics*

2006-2009 University of Kentucky

Advisor: Prof. Steven W. Yates

*B.S., Physics and  
B.S., Mathematics*

2002-2006 University of Richmond

Advisors: Prof. Cornelius W. Beausang & Prof. Mirela S. Fetea

## WORK EXPERIENCE

*Mississippi State  
University (MSU)*

2017 – Assistant Professor

Mississippi State University

My work focuses on the low-energy nuclear science studies of exotic nuclei (large  $N/Z$ ) via  $\beta$ -decay experiments. By utilizing the features of  $\beta$  decay, a radioactive decay that converts one element into another, we can probe the shape of a nucleus as a function of energy. Primarily, my research centers on using fast-timing scintillator arrays to measure half-lives of nuclear states in the implanted nuclei. By using the right scintillator materials, we can maximize both timing resolution and energy resolution of the emitted radiation, additionally allowing for the identification of conversion electrons observed within our system. All together, this enables us to determine transition strengths of many different decay modes and directly compare to the predictions of theoretical calculations. I am currently the

primary spokesperson for two approved experiments at NSCL, the first of which ran in Summer 2018 utilizing the new fast-timing detection system I am developing and the second is tentatively scheduled to run in Spring 2020. I'm also the primary spokesperson for two approved experiments at LANSCE, the first of which ran in Fall 2018 and the second is scheduled to run in the Summer of 2019.

*National  
Superconducting  
Cyclotron  
Laboratory (NSCL)*

2014 – 2017      Research Associate, Nuclear Science and Security Consortium  
Postdoctoral Fellow

National Superconducting Cyclotron Laboratory, Michigan State University.  
Nuclear Science and Security Consortium

Low-energy nuclear science studies of exotic nuclei (large  $N/Z$ ) via  $\beta$ -decay experiments. In particular, I developed a fast-timing scintillator array with all digital electronics, implemented a method for synchronizing all digitized input channels, and performed computational simulations. The goal of this work was to measure nuclear states with picosecond lifetimes, one atom at a time. The projects I was involved with at NSCL were relevant to an experiment studying the low-lying level scheme of  $^{68}\text{Ni}$ , which ran in the spring of 2015 (I was co-spokesperson). Additionally, I worked on the analysis of  $^{68}\text{Co}$  from this same data set.

*University of  
Kentucky (UK)*

2008–2014      Research Assistant

Department of Physics & Astronomy, University of Kentucky.

Performed neutron scattering experiments to study the low-lying structure of nuclei relevant to fundamental science searches. Additionally, I worked to extract  $\gamma$ -ray cross sections in  $^{76}\text{Ge}$  that are important to determining potential contaminants to the experimental signature and background rates in ton-scale detectors that are being commissioned in international efforts to observe an extremely rare decay process (if it occurs at all) in this isotope called neutrinoless double-beta decay. I also assisted in several neutron scattering experiments using neutron detectors, whose aims were both for detector development as well as determining experimental input for many important materials in advanced nuclear reactor design. Efforts to support each of the above projects involved my developing software both for physics purposes through data analysis as well as the data acquisition system currently in use in the laboratory.

*University of  
Kentucky (UK)*

2006–2008      Teaching Assistant

Department of Physics & Astronomy, University of Kentucky.

Taught laboratory and recitation sections for algebra-based, introductory physics courses. The class was geared towards non-majors and involved adapting to teach physics in a way that was a little different from the way in which I was taught.

*Master Cho's Tae  
Kwon Do*

2003–2006      Tae Kwon Do Instructor

Master Cho's Tae Kwon Do and Martial Arts, Glen Allen, VA.

Taught Tae Kwon Do to children and adults of ages ranging from 3 to 70+. The instructor position took a leading role in its final year, resulting in my being the first contact of each class of students for roughly 10 minutes of a 50 minute class in 4 to 6 classes a day, 4 days a week.

*University of  
Richmond (UR)*

2003–2005      Mathematics and Physics Tutor

Academic Skills Center, University of Richmond.

Tutored for calculus-based mathematics courses and all physics courses. The tutoring involved small groups, either one-on-one or two-on-one, and comprised of working through example problems and previous homework assignments.

## LEADERSHIP AND SERVICE

*LANSCE*

2019

Primary Experimental Spokesperson - LANSCE

Primary spokesperson for the LANSCE experiment - *Cross section measurements of the  $^{112}\text{Cd}(n,\gamma)$  reaction.* The experiment uses DANCE and is tentatively set to run October 25, 2019.

- MS State*      2018 -      Department of Physics and Astronomy Diversity Committee Chair  
Chair of the newly formed Department of Physics and Astronomy Diversity Committee. The committee advises the Department Chair on how to improve the diversity of the MS State workforce and how to make the MS State work-environment welcoming and inclusive. This includes planning events, organizing members of this committee to serve on hiring committees, and creating "Awareness Slides" that aim to guide MS State workers on handling various issues that may be encountered at MS State or any workplace.
- MS State*      2018 -      Department of Physics and Astronomy Library Committee Chair  
Chair of the Physics and Astronomy Library Committee serves as a liaison between the department and library, organizes purchasing of new physics and astronomy books for the library, and attend the Annual Library Meeting (held early Fall each year)
- MS State*      2018 - 2019      Lecturer Hiring Committee  
Member of the hiring committee that was tasked to evaluate, interview, and recommend for hire two candidates for lecturer positions at MS State.
- LANSCE*      2018      Primary Experimental Spokesperson - LANSCE  
Primary spokesperson for the LANSCE experiment - *Cross section measurements of the  $^{114}\text{Cd}(n,\gamma)$  reaction.* The experiment used DANCE and ran in the fall of 2018.
- NSCL*      2017      Primary Experimental Spokesperson - NSCL Experiment 17011  
Primary spokesperson for the NSCL Experiment 17011 - *Lifetime Measurements in Neutron-rich Nuclei.* The experiment is tentatively scheduled to run Spring 2020.
- NSCL*      2016      Primary Experimental Spokesperson - NSCL Experiment 16032  
Primary spokesperson for the NSCL Experiment 16032 - *Lifetime Measurement within the  $N = 20$  Island of Inversion.* The experiment ran June 21<sup>st</sup> – 29<sup>th</sup>, 2018.
- PRL*      2018 -      Referee - Physical Review Letters  
Referee for Physical Review Letters.
- NSCL*      2016 - 2017      Diversity Advisory Committee Member  
Research Associate representative on the Diversity Advisory Committee. The committee advises the NSCL director on how to improve the diversity of the NSCL workforce and how to make the NSCL work-environment welcoming and inclusive. This includes planning events and creating "Awareness Slides" that aim to guide NSCL workers on handling various issues that may be encountered at NSCL or any workplace.
- PRC*      2016 -      Referee - Physical Review C  
Referee for Physical Review C.
- NSCL*      2015      Experimental Spokesperson - NSCL Experiment 14057  
Co-spokesperson for the NSCL Experiment 14057 - *Fast-timing Studies of Excited States in  $^{68}\text{Ni}$ .* The experiment ran April 19 - 27, 2015.
- NSCL*      2015 - 2016      Nuclear Science Seminar Committee Member

Research Associate representative on the Nuclear Science Seminar Committee. The committee plans the weekly nuclear science seminar series, including nominating and selecting speakers to invite as well as managing the scheduling of the speakers.

*EPJA*            2015 -            Referee - The European Physical Journal A  
Referee for European Physical Journal A.

### HONORS AND AWARDS

<i>FRIB</i>	2018	FRIB Visiting Scholar
<i>NSSC</i>	2014 – 2016	Nuclear Science and Security Consortium Postdoctoral Fellow
<i>UK</i>	2013	Marcus T. McEllistrem Summer Fellowship Award
<i>CGS14</i>	2011	Fourteenth International Symposium on Capture Gamma-Ray Spectroscopy and Related Topics (2011) award for best poster presentation
<i>UK</i>	2006	University of Kentucky Summer Stipend Award from the Department of Physics and Astronomy
<i>UR</i>	2006	The Robert Edward Loving Award in Physics, University of Richmond
<i>UR</i>	2005	University of Richmond Undergraduate Research Committee Summer Stipend Award
<i>CEU</i>	2004	Conference Experience for Undergraduates (CEU) program award to attend the Fall Meeting of the Division of Nuclear Physics of the American Physical Society
<i>CEU</i>	2003	CEU program award to attend the Fall Meeting of the Division of Nuclear Physics of the American Physical Society
<i>UR</i>	2002	University Scholar 4-year scholarship, University of Richmond

### PROFESSIONAL SOCIETIES

2014 –            American Chemical Society  
2003 –            American Physical Society

### COMPUTER SKILLS

Microsoft Word, Excel, Power Point, and their OpenOffice and LibreOffice equivalents

PYTHON, JAVA, C, C++, FORTRAN, HTML/CSS, Linux, Microsoft Windows

Graphics and Simulation Tools: MATHEMATICA, MATLAB, MAPLE, and GEANT4

Typesetting system L<sup>A</sup>T<sub>E</sub>X

Wrote the Kmax-based data acquisition systems currently in use at the University of Kentucky Accelerator Laboratory

Spectrum analysis software packages Tv and ROOT

Worked on the Notre Dame Nuclear Database project since its inception

## GRANTS AWARDED

- NSF CAREER*                    2019                    CAREER: Investigating shape coexistence near closed shells via lifetime measurements  
Principal Investigator: **Benjamin Crider**, Award Number 1848177, Total Award Amount: \$679,626 over 5 years, Award Start Date: April 1, 2019
- ERDC*                            2019                    Characterization of plume migration of depleted uranium using a gamma-ray imager  
Principal Investigator: **Benjamin Crider**, Grant No. G00002243, Parent Fund 360704, Child Fund 361369-038400-021000, Total Award Amount: \$49,256 over 1.5 years, Award Start Date: February 16, 2019

## PUBLICATIONS IN REFEREED JOURNALS

### Selected Highlights

- Phys. Rev. C*                    2019                    Benchmarking the extraction of statistical neutron capture cross sections on short-lived nuclei for applications using the  $\beta$ -Oslo method  
S.N.Liddick, A.C.Larsen, M.Guttormsen, A.Spyrou, **B.P.Crider**, F.Naqvi, J.E.Midtbo, F.L.Bello Garrote, D.L.Bleuel, L.Crespo Campo, A.Couture, A.C.Dombos, F.Giacoppo, A.Gorgen, K.Hadynska-Klek, T.W.Hagen, V.W.Ingeberg, B.V.Kheswa, R.Lewis, S.Mosby, G.Perdikakis, C.J.Prokop, S.J.Quinn, T.Renstrom, S.J.Rose, E.Sahin, S.Siem, G.M.Tveten, M.Wiedeking, F.Zeiser, *Phys.Rev. C* 100, 024624 (2019)
- Phys. Rev. C*                    2019                     $^{69,71}\text{Co}$   $\beta$ -decay strength distributions from total absorption spectroscopy  
S.Lyons, A.Spyrou, S.N.Liddick, F.Naqvi, **B.P.Crider**, A.C.Dombos, D.L.Bleuel, B.A.Brown, A.Couture, L.Crespo Campo, J.Engel, M.Guttormsen, A.C.Larsen, R.Lewis, P.Moller, S.Mosby, M.R.Mumpower, E.M.Ney, A.Palmisano, G.Perdikakis, C.J.Prokop, T.Renstrom, S.Siem, M.K.Smith, S.J.Quinn, *Phys.Rev. C* 100, 025806 (2019)
- Phys. Rev. C*                    2019                    Inelastic neutron scattering studies of  $^{76}\text{Se}$   
S. Mukhopadhyay, **B. P. Crider**, B.A.Brown, A.Chakraborty, A.Kumar, M.T.McEllistrem, E.E.Peters, F.M.Prados-Estévez, S.W.Yates, *Phys. Rev. C* 99, 014313 (2019)
- Phys. Rev. C*                    2017                    Nuclear structure of  $^{76}\text{Ge}$  from inelastic neutron scattering measurements and shell model calculations  
S. Mukhopadhyay, **B. P. Crider**, B. A. Brown, S. F. Ashley, A. Chakraborty, A. Kumar, M. T. McEllistrem, E. E. Peters, F. M. Prados-Estévez, and S. W. Yates, *Phys. Rev. C* 95, 014327 (2017)
- J. Phys. G.*                    2017                    Neutron-capture rates for explosive nucleosynthesis: the case of  $^{68}\text{Ni}(n,\gamma)^{69}\text{Ni}$

A. Spyrou, A. C. Larsen, S. N. Liddick, F. Naqvi, **B. P. Crider**, A. C. Dombos, M. Guttormsen, D. L. Bleuel, A. Couture, L. Crespo Campo, R. Lewis, S. Mosby, M. R. Mumpower, G. Perdikakis, C. J. Prokop, S. J. Quinn, T. Renstrom, S. Siem, R. Surman, J. Phys. G: Nucl. Part. Phys. 44 044002 (2017)

- Phys. Lett. B* 2016 Shape coexistence from lifetime and branching-ratio measurements in  $^{68,70}\text{Ni}$   
**B. P. Crider**, C. J. Prokop, S. N. Liddick, M. Alshudifat, A. D. Ayangeakaa, M. P. Carpenter, J. J. Carroll, J. Chen, C. J. Chiara, H. M. David, A. C. Dombos, S. Go, R. Grzywacz, J. Harker, R. V. F. Janssens, N. Larson, T. Lauritsen, R. Lewis, S. J. Quinn, F. Recchia, D. Seweryniak, A. Spyrou, S. Suchyta, W. B. Walters, and S. Zhu, *Phys. Lett. B* 763, 108 (2016)
- Phys. Rev. Lett.* 2016 Strong Neutron- $\gamma$  Competition above the Neutron Threshold in the Decay of  $^{70}\text{Co}$   
 S. N. Liddick, A. Spyrou, F. Naqvi, **B. P. Crider**, A. C. Dombos, D. L. Bleuel, A. Couture, L. Crespo Campo, M. Guttormsen, A. C. Larsen, R. Lewis, P. Möller, S. Mosby, M. R. Mumpower, G. Perdikakis, C. J. Prokop, T. Renstrom, S. Siem, S. J. Quinn, S. Valenta, *Phys. Rev. Lett.* 117, 142701 (2016)
- Phys. Rev. Lett.* 2016 Experimental Neutron Capture Rate Constraint Far from Stability  
 S. N. Liddick, A. Spyrou, **B. P. Crider**, F. Naqvi, A. C. Larsen, M. Guttormsen, M. Mumpower, R. Surman, G. Perdikakis, D. L. Bleuel, A. Couture, L. Crespo Campo, A. C. Dombos, R. Lewis, S. Mosby, S. Nikas, C. J. Prokop, T. Renstrom, B. Rubio, S. Siem, S. J. Quinn, *Phys. Rev. Lett.* 116, 242502 (2016)
- Phys. Rev. C* 2015 Inelastic neutron scattering cross sections for  $^{76}\text{Ge}$  relevant to background in neutrinoless double- $\beta$  decay experiments  
**B. P. Crider**, E. E. Peters, J. M. Allmond, M. T. McEllistrem, F. M. Prados-Estévez, T. J. Ross, J. R. Vanhoy, and S. W. Yates, *Phys. Rev. C* 92, 034310 (2015)
- Phys. Rev. C* 2015 New low-energy  $o^+$  state and shape coexistence in  $^{70}\text{Ni}$   
 C. J. Prokop, **B. P. Crider**, S. N. Liddick, A. D. Ayangeakaa, M. P. Carpenter, J. J. Carroll, J. Chen, C. J. Chiara, H. M. David, A. C. Dombos, S. Go, J. Harker, R. V. F. Janssens, N. Larson, T. Lauritsen, R. Lewis, S. J. Quinn, F. Recchia, D. Seweryniak, A. Spyrou, S. Suchyta, W. B. Walters, and S. Zhu, *Phys. Rev. C* 92, 061302(R) (2015)
- 
- Phys. Rev. C* 2019 Probing the role of proton cross-shell excitations in  $^{70}\text{Ni}$  using nucleon knockout reactions  
 B. Elman, A. Gade, R. V. F. Janssens, A. D. Ayangeakaa, D. Bazin, J. Belarge, P. C. Bender, B. A. Brown, C. M. Campbell, M. P. Carpenter, H. L. Crawford, **B. P. Crider**, P. Fallon, A. M. Forney, J. Harker, S. N. Liddick, B. Longfellow, E. Lunderberg, C. J. Prokop, J. Sethi, R. Taniuchi, W. B. Walters, D. Weisshaar, S. Zhu, *Phys. Rev. C* 100, 034317 (2019)
- Phys. Rev. C* 2019 Experimental constraints on the  $^{73}\text{Zn}(n, \gamma)^{74}\text{Zn}$  reaction rate  
 R. Lewis, S. N. Liddick, A. C. Larsen, A. Spyrou, D. L. Bleuel, A. Couture, L. Crespo Campo, **B. P. Crider**, A. C. Dombos, M. Guttormsen, S. Mosby, F. Naqvi, G. Perdikakis, C. J. Prokop, S. J. Quinn, T. Renstrom, S. Siem, *Phys. Rev. C* 99, 034601 (2019)
- Phys. Rev. C* 2019 Emerging collectivity from the nuclear structure of  $^{132}\text{Xe}$ : Inelastic neutron scattering studies and shell-model calculations

E.E.Peters, A.E.Stuchbery, A.Chakraborty, **B.P.Crider**, S.F.Ashley, A.Kumar, M.T.McEllistrem, F.M.Prados-Estévez, S.W.Yates, Phys. Rev. C 99, 064321 (2019)

- Phys. Rev. C* 2018 Enhanced low-energy  $\gamma$ -decay strength of  $^{70}\text{Ni}$  and its robustness within the shell model  
A. C. Larsen, J. E. Midtbo, M. Guttormsen, T. Renstrom, S. N. Liddick, A. Spyrou, S. Karampagia, B. A. Brown, O. Achakovskiy, S. Kamedzhiev, D. L. Bleuel, A. Couture, L. Crespo Campo, **B. P. Crider**, A. C. Dombos, R. Lewis, S. Mosby, F. Naqvi, G. Perdikakis, C. J. Prokop, S. J. Quinn, S. Siem, Phys. Rev. C 97, 054329 (2018)
- Nucl. Phys. A* 2018  $^{54}\text{Fe}$  neutron elastic and inelastic scattering differential cross sections from 2–6 MeV  
J. R. Vanhoy, S. H. Liu, S. F. Hicks, B. M. Combs, **B. P. Crider**, A. J. French, E. A. Garza, T. Harrison, S. L. Henderson, T. J. Howard, M. T. McEllistrem, S. Nigam, R. L. Pecha, E. E. Peters, F. M. Prados-Estévez, A. P. D. Ramirez, B. G. Rice, T. J. Ross, Z. C. Santonil, L. C. Sidwell, J. L. Steves, B. K. Thompson, and S. W. Yates, Nucl. Phys. A 972, 107 (2018)
- Phys. Rev. C* 2017 Level lifetimes and the structure of  $^{134}\text{Xe}$  from inelastic neutron scattering  
E. E. Peters, A. Chakraborty, **B. P. Crider**, S. F. Ashley, E. Elhami, S. F. Hicks, A. Kumar, M. T. McEllistrem, S. Mukhopadhyay, J. N. Orce, F. M. Prados-Estévez, and S. W. Yates, Phys. Rev. C 96, 014313 (2017)
- Phys. Rev. C* 2017 Lifetime measurements of low-spin negative-parity states in  $^{160}\text{Gd}$   
S. R. Lesher, C. Casarella, A. Aprahamian, L. M. Robledo, **B. P. Crider**, R. Ikeyama, I. R. Marsh, M. T. McEllistrem, E. E. Peters, F. M. Prados-Estévez, M. K. Smith, Z. R. Tully, J. R. Vanhoy, and S. W. Yates, Phys. Rev. C 95, 064309 (2017)
- Phys. Rev. C* 2017 Collective quadrupole behavior in  $^{106}\text{Pd}$   
F. M. Prados-Estévez, E. E. Peters, A. Chakraborty, M. G. Mynk, D. Bandyopadhyay, N. Boukharouba, S. N. Choudry, **B. P. Crider**, P. E. Garrett, S. F. Hicks, A. Kumar, S. R. Lesher, C. J. McKay, M. T. McEllistrem, S. Mukhopadhyay, J. N. Orce, M. Scheck, J. R. Vanhoy, J. L. Wood, and S. W. Yates, Phys. Rev. C 95, 032328 (2017)
- Phys. Rev. C* 2017  $\beta$  decay of  $^{38,40}\text{Si}$  ( $T_z = +5, +6$ ) to low-lying core excited states in odd-odd  $^{38,40}\text{P}$  isotopes  
Vandana Tripathi, R. S. Lubna, B. Abromeit, H. L. Crawford, S. N. Liddick, Y. Utsuno, P. C. Bender, **B. P. Crider**, R. Dungan, P. Fallon, K. Kravvaris, N. Larson, A. O. Macchiavelli, T. Otsuka, C. J. Prokop, A. L. Richard, N. Shimizu, S. L. Tabor, A. Volya, S. Yoshida, Phys. Rev. C 95, 024308 (2017)
- Eur. Phys. J. A* 2016  $E0$  transitions in  $^{106}\text{Pd}$ : Implications for shape coexistence  
E. E. Peters, F. M. Prados-Estévez, A. Chakraborty, M. G. Mynk, D. Bandyopadhyay, S. N. Choudry, **B. P. Crider**, P. E. Garrett, S. F. Hicks, A. Kumar, S. R. Lesher, C. J. McKay, J. N. Orce, M. Scheck, J. R. Vanhoy, J. L. Wood, S. W. Yates, Eur. Phys. J. A 52, 96 (2016)
- Eur. Phys. J. A* 2016 First measurement of  $^{60}\text{Ge}$   $\beta$ -decay  
A. A. Ciemny, W. Dominik, T. Ginter, R. Grzywacz, Z. Janas, M. Kuich, C. Mazzocchi, K. Miernik, M. Pflutzner, M. Pomorski, D. Bazin, T. Baumann, A. Bezbakh, **B. P. Crider**, M. Cwiok, S. Go, G. Kaminski, K. Kolos, A. Korgul, E. Kwan, S. N. Liddick, S. V. Paulauskas, J. Periera, K. P. Rykaczewski, C. Sumithrarachchi, Y. Xiao, Eur. Phys. J. A 52, 89 (2016)

- Phys. Rev. C* 2016  $0^+$  states in  $^{130,132}\text{Xe}$ : A search for  $E(5)$  behavior  
E. E. Peters, T. J. Ross, S. F. Ashley, A. Chakraborty, **B. P. Crider**, M. D. Hennek, S. H. Liu, M. T. McEllistrem, S. Mukhopadhyay, F. M. Prados-Estevez, A. P. D. Ramirez, J. S. Thrasher, S. W. Yates, *Phys. Rev. C* 94, 024313 (2016)
- Phys. Rev. C* 2013 First observation of  $^{59}\text{Ge}$   
A. A. Ciemny, W. Dominik, T. Ginter, R. Grzywacz, Z. Janas, M. Kuich, C. Mazzocchi, M. Pfützner, M. Pomorski, F. Zaryński, D. Bazin, T. Baumann, A. Bezbakh, **B. P. Crider**, M. Ćwiok, S. Go, G. Kamiński, K. Kolos, A. Korgul, E. Kwan, S. Liddick, K. Miernik, S. V. Paulauskas, J. Pereira, K. Rykaczewski, C. Sumithrarachchi, Y. Xiao, *Phys. Rev. C* 92, 014622 (2015)
- Phys. Rev. C* 2013 Collectivity of  $0^+$  states in  $^{160}\text{Gd}$   
S. R. Leshner, C. Casarella, A. Aprahamian, **B. P. Crider**, R. Ikeyama, I. R. Marsh, M. T. McEllistrem, E. E. Peters, F. M. Prados-Estévez, M. K. Smith, Z. R. Tully, J. R. Vanhoy, and S. W. Yates, *Phys. Rev. C* 91, 054317 (2015)
- Nucl. Phys. A* 2013 Neutron scattering differential cross sections for  $^{23}\text{Na}$  from 1.5 to 4.5 MeV  
J. R. Vanhoy, S. F. Hicks, A. Chakraborty, B. R. Champine, B. M. Combs, **B. P. Crider**, L. J. Kersting, A. Kumar, C. J. Lueck, S. H. Liu, P. J. McDonough, M. T. McEllistrem, E. E. Peters, F. M. Prados-Estévez, L. C. Sidwell, A. J. Sigillito, D. W. Watts, and S. W. Yates, *Nucl. Phys. A* 939, 121-140 (2015)
- Phys. Rev. C* 2013 Level lifetimes in the stable Zr nuclei: Effects of chemical properties in Doppler-shift measurements  
E. E. Peters, A. Chakraborty, **B. P. Crider**, B. H. Davis, M. K. Gnanamani, M. T. McEllistrem, F. M. Prados-Estévez, J. R. Vanhoy, and S. W. Yates, *Phys. Rev. C* 88, 024317 (2013)
- Phys. Rev. C* 2013 Dipole response of  $^{76}\text{Se}$  above 4 MeV  
P.M. Goddard, N. Cooper, V. Werner, G. Rusev, P.D. Stevenson, A. Rios, C. Bernards, A. Chakraborty, **B.P. Crider**, J. Glorius, R.S. Ilieva, J.H. Kelley, E. Kwan, E.E. Peters, N. Pietralla, R. Raut, C. Romig, D. Savran, L. Schnorrenberger, M.K. Smith, K. Sonnabend, A.P. Tonchev, W. Tornow, S.W. Yates, *Phys. Rev. C* 88, 064308 (2013)
- Phys. Rev. Lett.* 2013 Collective Structure in  $^{94}\text{Zr}$  and Subshell Effects in Shape Coexistence  
A. Chakraborty, E. E. Peters, **B. P. Crider**, C. Andreoiu, P. C. Bender, D. S. Cross, G. A. Demand, A. B. Garnsworthy, P. E. Garrett, G. Hackman, B. Hadinia, S. Ketelhut, Ajay Kumar, K. G. Leach, M. T. McEllistrem, J. Pore, F. M. Prados-Estévez, E. T. Rand, B. Singh, E. R. Tardiff, Z.-M. Wang, J. L. Wood, and S.W. Yates, *Phys. Rev. Lett.* 110, 022504 (2013)
- Phys. Rev. C* 2012 New decay pattern of negative-parity states at  $N = 90$   
A. Chakraborty, F. M. Prados-Estévez, S. N. Choudry, **B. P. Crider**, P. E. Garrett, W. D. Kulp, A. Kumar, M. T. McEllistrem, S. Mukhopadhyay, M. G. Mynk, J. N. Orce, E. E. Peters, J. L. Wood, and S. W. Yates, *Phys. Rev. C* 86, 064314 (2012)
- Phys. Rev. C* 2011 Status of vibrational structure in  $^{62}\text{Ni}$   
A. Chakraborty, J. N. Orce, S. F. Ashley, B. A. Brown, **B. P. Crider**, E. Elhami, M. T. McEllistrem, S. Mukhopadhyay, E. E. Peters, B. Singh, and S. W. Yates, *Phys. Rev. C* 83, 034316 (2011)
- Phys. Rev. C* 2008 Multiphonon states in  $^{136}_{56}\text{Ba}_{80}$



S. Mukhopadhyay, M. Scheck, **B. Crider**, S. N. Choudry, E. Elhami, E. Peters, M. T. McEllistrem, J. N. Orce, and S. W. Yates, Phys. Rev. C 78, 034317 (2008)

*Phys. Rev. C* 2008 Determination of the  $2_1^+ \rightarrow 0_1^+$  transition strengths in  $^{58}\text{Ni}$  and  $^{60}\text{Ni}$   
J. N. Orce, **B. Crider**, S. Mukhopadhyay, E. Peters, E. Elhami, M. Scheck, B. Singh, M. T. McEllistrem, and S. W. Yates, Phys. Rev. C 77, 064301 (2008)

*Phys. Rev. C* 2008 Measurement of conversion coefficients in normal and triaxial strongly deformed bands in  $^{167}\text{Lu}$   
G. Gürdal, C.W. Beausang, D.S. Brenner, H. Ai, R.F. Casten, **B. Crider**, A. Heinz, E. Williams, D. J. Hartley, M.P. Carpenter, A.A. Hecht, R.V.F. Janssens, T. Lauritsen, R. Raabe, D. Seweryniak, S. Zhu, and J.X. Saladin, Phys. Rev. C 77, 024314 (2008)

*Acta Phys. Pol. B* 2007 New Results on Fission Cross Sections in Actinide Nuclei Using the Surrogate Ratio Method and on Conversion Coefficients in Triaxial Strongly Deformed Bands in  $^{167}\text{Lu}$  from ICE Ball and Gammasphere  
C.W. Beausang, S.R. Leshner, J.T. Burke, L.A. Bernstein, L. Phair, H. Ai, G. Gürdal, L. Ahle, D.S. Brenner, M. Carpenter, R.M. Clark, **B. Crider**, J. Escher, P. Fallon, J.P. Greene, D.J. Hartley, A.A. Hecht, R.V.F. Janssens, T. Lauritsen, I.Y. Lee, C.J. Lister, A.O. Macchiavelli, M.A. McMahan, C. Plettner, J. Rohrer, D. Seweryniak, E. Williams, and S. Zhu. Acta Phys. Pol. B38, 1535 (2007)

*Phys. Rev. C* 2006 Deducing the  $^{237}\text{U}(n,f)$  cross section using the surrogate ratio method  
J. T. Burke, L. A. Bernstein, J. Escher, L. Ahle, J.A. Church, F.S. Dietrich, E.B. Norman, L. Phair, P. Fallon, R.M. Clark, M.A. Deleplanque, M. Descovich, M. Cromaz, I.Y. Lee, A.O. Macchiavelli, M.A. McMahan, L.G. Moretto, E. Rodriguez-Vieitez, F.S. Stephens, H. Ai, C. Plettner, C. Beausang, and **B. Crider**, Phys.Rev. C 73, 054604 (2006)

*J. Phys. G* 2005 Chiral Degeneracy in Mass 130 Regions  
M.S. Fetea, V. Nikolova, and **B. Crider**, J. Phys. G: Nucl. Part. Phys., J. Phys. G: Nucl. Part. Phys. 31 (2005) S1847

*Eur. Phys. J.* 2005 Chiral Symmetry and signature splitting in odd-odd neutron deficient Pr nuclei  
M.S. Fetea, V. Nikolova, and **B. Crider**, Eur. Phys. J. A direct (2005) DOI: 10.1140/epjad/i2005-06-175-0

*Phys. Rev. C* 2005 Estimation of (n,f) cross sections by measuring reaction probability ratios  
C. Plettner, H. Ai, C.W. Beausang, L.A. Bernstein, L. Ahle, H. Amro, M. Balibon, J.T. Burke, J.A. Caggiano, R.F. Casten, J.A. Church, J.R. Cooper, **B. Crider**, G. Gürdal, A. Heinz, E.A. McCutchan, K. Moody, J.A. Punyon, J. Qian, J.J. Ressler, A. Schiller, and E. Williams, Phys. Rev. C71 051602 (2005)

*J. Phys. G* 2005 Measuring reaction probability ratios to simulate neutron-induced cross-sections of short-lived nuclei  
C. Plettner, H. Ai, C.W. Beausang, L.A. Bernstein, L. Ahle, H. Amro, M. Babilon, J.T. Burke, J.A. Caggiano, R.F. Casten, J.A. Church, J.R. Cooper, **B. Crider**, G. Gürdal, A. Heinz, E.A. McCutchan, K. Moody, J.A. Punyon, J. Qian, J.J. Ressler, A. Schiller, E. Williams, and W. Younes, J. Phys. G31 S1573 (2005)

## CONFERENCE PROCEEDINGS PUBLICATIONS

- ISTROS 2015*      2017      Studies of  $A = 76$  Nuclei: States in  $^{76}\text{Se}$  below 3 MeV  
**B.P. Crider**, A. Chakraborty, A. Kumar, E.E. Peters, F.M. Prados-Estévez, T.J. Ross, M.T. McEllistrem, S.W. Yates, *ISTROS 2015 - Isospin, Structure, Reactions and Energy of Symmetry 2015*, Castá-Papiernička, Slovakia, May. 1-6, 2015, M. Veselský and M. Venhart, Eds., p.7 (2017), [http://www.fu.sav.sk/fileadmin/user\\_upload/oddelenia/ojf/nph/events/ISTROS/2015/ISTROS.2015\\_Proceedings.pdf](http://www.fu.sav.sk/fileadmin/user_upload/oddelenia/ojf/nph/events/ISTROS/2015/ISTROS.2015_Proceedings.pdf)
- CGS15*      2015      Inelastic neutron scattering studies of  $^{76}\text{Ge}$  and  $^{76}\text{Se}$ : relevance to neutrinoless double- $\beta$  decay  
**B.P. Crider**, E.E. Peters, T.J. Ross, M.T. McEllistrem, F.M. Prados-Estévez, J.M. Allmond, J.R. Vanhoy, and S.W. Yates, *CGS15 - Capture Gamma-Ray Spectroscopy and Related Topics*, Dresden, Germany, Aug.25-29, 2014, R.Schwengner, K.Zuber, Eds., p.05001 (2015), EPJ Web Conf. 93, (2015)
- TIPP*      2014      Kmax-based Event Mode Data Acquisition System for the University of Kentucky Accelerator Laboratory  
**B.P. Crider** and R.B. Piercey, *Proceedings of the International Conference on Technology and Instrumentation in Particle Physics* (2014).  
<http://pos.sissa.it/archive/conferences/213/394/TIPP2014.394.pdf>
- CGS14*      2013      Nuclear Structure Studies of  $^{76}\text{Se}$  and  $^{76}\text{Ge}$  from Inelastic Neutron Scattering  
**B.P. Crider**, A. Chakraborty, A. Kumar, E.E. Peters, F.M. Prados-Estévez, M.T. McEllistrem, and S.W. Yates, *Capture Gamma-ray Spectroscopy and Related Topics*, Proceedings of the Fourteenth International Symposium, World Scientific Publishing Co. Pte. Ltd. (2013)
- IEEE NSS/MIC*      2012      Kmax-Based Data Acquisition System for the University of Kentucky Accelerator Laboratory  
**Benjamin P. Crider** and Rodney B. Piercey, 2012 IEEE Nuclear Science Symposium and Medical Imaging Conference Record (NSS/MIC), N14-100 (2012).  
<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6551265>
- ND 2016*      2016      Capture cross sections on unstable nuclei  
A. P. Tonchev, J. E. Escher, N. Scielzo, P. Bedrossian, R. S. Ilieva, P. Humby, N. Cooper, P. M. Goddard, V. Werner, W. Tornow, G. Rusev, J. H. Kelley, N. Pietralla, M. Scheck, D. Savran, B. Löher, S. W. Yates, **B. P. Crider**, E. E. Peters, N. Tsoneva, and S. Goriely, *ND 2016: International Conference on Nuclear Data for Science and Technology*, EPJ Web of Conferences 146, 01013 (2017)
- CGS15*      2015      DESCANT and  $\beta$ -delayed neutron measurements at TRIUMF  
V. Bildstein, P. E. Garrett, S. F. Ashley, G. C. Ball, L. Bianco, D. Bandyopadhyay, J. Bangay, **B. P. Crider**, G. Demand, G. Deng, I. Dillmann, A. Finlay, A. B. Garnsworthy, G. Hackman, B. Hadinia, R. Krucken, K. G. Leach, J-P. Martin, M. T. McEllistrem, C. J. Pearson, E. E. Peters, F. M. Prados-Estévez, A. Radich, F. Sarazin, C. Sumithrarachchi, C. E. Svensson, J. R. Vanhoy, J. Wong, and S. W. Yates, *CGS15 - Capture Gamma-Ray Spectroscopy and Related Topics*, Dresden, Germany, Aug.25-29, 2014, R.Schwengner, K.Zuber, Eds., p.05001 (2015), EPJ Web Conf. 93, (2015)
- CGS15*      2015      Studies of  $^{54,56}\text{Fe}$  Neutron Scattering Cross Sections  
S. F. Hicks, J. R. Vanhoy, A. J. French, S. L. Henderson, T. J. Howard, R. L. Pecha, Z. C. Santonil, **B. P. Crider**, S. Liu, M. T. McEllistrem, E. E. Peters, F. M. Prados-Estévez, T. J. Ross, S. W. Yates, *CGS15 -*

Capture Gamma-Ray Spectroscopy and Related Topics, Dresden, Germany, Aug.25-29, 2014, R.Schwengner, K.Zuber, Eds., p.05001 (2015), EPJ Web Conf. 93, (2015)

- 
- ICFN6*            2017            Nuclear Astrophysics with Radioactive Beams  
 S. N. Liddick, A. Spyrou, **B. P. Crider**, F. Naqvi, A. C. Larsen, M. Guttormsen, M. Mumpower, R. Surman, G. Perdikakis, D. L. Bleuel, A. Couture, L. Crespo Campo, A. C. Dombos, R. Lewis, S. Mosby, S. Nikas, C. J. Prokop, T. Renstrom, B. Rubio, S. Siem, S. J. Quinn, Fission and Properties of Neutron-Rich Nuclei: Proceedings of the Sixth International Conference on Fission and Properties of Neutron-Rich Nuclei, Florida, USA, Nov. 6-12, 2016, Nuclear Astrophysics with Radioactive Beams. Fission and Properties of Neutron-Rich Nuclei: pp. 480-481, (2017)
- CGS15*            2015            Inelastic neutron scattering studies of  $^{132,134}\text{Xe}$ : Elucidating structure in a transitional region and possible interferences for  $0\nu\beta\beta$  searches  
 E.E. Peters, T.J. Ross, **B.P. Crider**, S.F. Ashley, A. Chakraborty, M.D. Hennek, A.Kumar, M.T. McEllistrem, F.M. Prados-Estévez, J.S. Thrasher, and S.W. Yates, CGS15 - Capture Gamma-Ray Spectroscopy and Related Topics, Dresden, Germany, Aug. 25-29, 2014, R.Schwenger, K.Zuber, Eds., p.05001 (2015), EPJ Web Conf. 93, (2015)
- CGS15*            2015            "No-spin" states and low-lying structures in  $^{130}\text{Xe}$  and  $^{136}\text{Xe}$   
 T. J. Ross, E. E. Peters, A. Chakraborty, **B. P. Crider**, A. Kumar, S. H. Liu, M. T. McEllistrem, F. M. Prados-Estévez, J. R. Vanhoy, S. W. Yates, CGS15 - Capture Gamma-Ray Spectroscopy and Related Topics, Dresden, Germany, Aug. 25-29, 2014, R.Schwenger, K.Zuber, Eds., p.05001 (2015), EPJ Web Conf. 93, (2015)
- CGS15*            2015            The Neutron Time-of-Flight Cross Section Program at the University of Kentucky - Adventures in Analysis II  
 J.R. Vanhoy, S.F. Hicks, **B.P. Crider**, A.J. French, E.A. Garza, S.L. Henderson, T.J. Howard, S.H. Liu, S. Nigam, R.L. Pecha, E.E. Peters, F.M. Prados-Estévez, M.T. McEllistrem, B.J. Rice, T.J. Ross, Z.C. Santonil, L.C. Sidwell, J.L. Steves, and S.W. Yates, CGS15 - Capture Gamma-Ray Spectroscopy and Related Topics, Dresden, Germany, Aug. 25-29, 2014, R.Schwenger, K.Zuber, Eds., p.05001 (2015), EPJ Web Conf. 93, (2015)
- INPC 2013*        2014            Nuclear Structure Studies of  $^{106}\text{Pd}$  and  $^{106}\text{Cd}$  with the  $(n,n'\gamma)$  Reaction  
 F. M. Prados-Estévez, A. Chakraborty, E. E. Peters, M. G. Mynk, A. Linnemann, D. Bandyopadhyay, N. Boukharouba, S. N. Choudry, **B. P. Crider**, P. E. Garrett, S. F. Hicks, J. Jolie, A. Kumar, S. R. Leshner, C. J. McKay, M. T. McEllistrem, S. Mukhopadhyay, J. N. Orce, M. Scheck, J. R. Vanhoy, J. L. Wood, and S. W. Yates, EPJ Web of Conferences 66, 02085 (2014), International Nuclear Physics Conference 2013
- INPC 2013*        2014            Differential Cross Sections for Neutron Elastic and Inelastic Scattering on  $^{23}\text{Na}$   
 J. R. Vanhoy, S. F. Hicks, A. Chakraborty, B. R. Champine, B. Combs, **B. P. Crider**, L. J. Kersting, A. Kumar, C. J. Lueck, P. J. McDonough, M. T. McEllistrem, E. E. Peters, F. M. Prados-Estévez, L. Sidwell, A. Sigillito, D. W. Watts, and S. W. Yates, EPJ Web of Conferences 66, 03091 (2014), International Nuclear Physics Conference 2013
- INPC 2013*        2014            Level Lifetimes in  $^{94}\text{Zr}$  from DSAM Measurements following Inelastic Neutron Scattering

- S. W. Yates, E. E. Peters, A. Chakraborty, **B. P. Crider**, M. T. McEllistrem, F. M. Prados-Estévez, and J. R. Vanhoy, EPJ Web of Conferences 66, 02111 (2014), International Nuclear Physics Conference 2013
- Application of Accelerators in Research and Industry 22* 2013 Elastic and inelastic neutron scattering cross sections for fission reactor applications  
S. F. Hicks, A. Chakraborty, B. Combs, **B. P. Crider**, L. Downes, J. Girgis, L. J. Kersting, A. Kumar, C. J. Lueck, P. J. McDonough, M. T. McEllistrem, E. E. Peters, F. M. Prados-Estévez, J. Schniederjan, L. Sidwell, A. J. Sigillito, J. R. Vanhoy, D. Watts, and S. W. Yates, AIP Conf. Proc. 1525, 276 (2013)
- CGS14 2013 Low-lying Structure of  $^{132,134}\text{Xe}$  from Inelastic Neutron Scattering  
E.E. Peters, A. Chakraborty, **B.P. Crider**, A. Kumar, F.M. Prados-Estévez, S.F. Ashley, E. Elhami, S. Mukhopadhyay, J.N. Orce, M.T. McEllistrem, and S.W. Yates, Capture Gamma-ray Spectroscopy and Related Topics, Proceedings of the Fourteenth International Symposium, World Scientific Publishing Co. Pte. Ltd. (2013)
- CGS14 2013 Internal conversion electron study of excited states in  $^{76}\text{As}$   
F. M. Prados-Estévez, T. Kibèdi, N Cooper, **B. P. Crider**, G. D. Dracoulis, R. F. Leslie, E. E. Peters, A. E. Stuchbery, A. P. Tonchev, V. Werner, L. T. Williams, and S. W. Yates, Capture Gamma-ray Spectroscopy and Related Topics, Proceedings of the Fourteenth International Symposium, World Scientific Publishing Co. Pte. Ltd. (2013)
- CGS14 2013 Transition Rates of Decays from Collective States in  $^{150}\text{Nd}$   
A. Chakraborty, F.M. Prados-Estévez, S.N. Choudry, **B.P. Crider**, P.E. Garrett, W.D. Kulp, A. Kumar, M.T. McEllistrem, S. Mukhopadhyay, M.G. Mynk, J.N. Orce, E.E. Peters, J.L. Wood, and S.W. Yates, Capture Gamma-ray Spectroscopy and Related Topics, Proceedings of the Fourteenth International Symposium, World Scientific Publishing Co. Pte. Ltd. (2013)
- Application of Accelerators in Research and Industry 21* 2011 Undergraduate Measurements For Fission Reactor Applications  
S. F. Hicks, L. J. Kersting, C. J. Lueck, P. McDonough, **B. P. Crider**, M. T. McEllistrem, E. E. Peters, and J. R. Vanhoy, AIP Conf. Proc. 1336, 738 (2011)
- CGS13 2009 Low-lying Collective States in  $^{136}\text{Ba}$   
M. Scheck, S. Mukhopadhyay, **B. Crider**, S.N. Choudry, E. Elhami, E.E. Peters, M.T. McEllistrem, J.N. Orce, and S.W. Yates, AIP Conference Proceedings, 1090, 253 (2009) (Capture Gamma-Ray Spectroscopy and Related Topics)

### INVITED TALKS

- LANSCE User Group Meeting 2018 Neutron capture cross section measurements of stable Cd isotopes relevant to safeguards applications  
2018 LANSCE User Group Meeting, Santa Fe, NM: November 5<sup>th</sup> - 7<sup>th</sup>, 2018
- UK Nuclear Seminar 2018 Probing nuclear shapes at the limits of stability using beta decay  
University of Kentucky Nuclear Seminar, Lexington, KY: September 21<sup>st</sup>, 2018
- UM/MSU Joint Symposium 2018 Nuclear Shapes at the Limits of Stability  
Joint Symposium for Physics Research: The University of Mississippi/Mississippi State University, Oxford, MS: April 28<sup>th</sup>, 2018

<i>FRIB Decay Workshop</i>	2018	Lifetime measurements with fast-timing arrays FRIB Decay Workshop, East Lansing, MI: January 25 <sup>th</sup> –26 <sup>th</sup> , 2018
<i>NUSTAR Week 2017</i>	2017	Exploring shape coexistence in neutron-rich nuclei near $N = 40$ via lifetime measurements at NSCL NUSTAR Week 2017, Ljubljana, Slovenia: September 29 <sup>th</sup> , 2017
<i>ARIS2016</i>	2016	Study of $^{68}\text{Co}$ low-energy structure via $\beta$ decay Advances in Radioactive Isotope Science, Keystone, CO: May 30 <sup>th</sup> , 2017
<i>Notre Dame</i>	2016	Nuclear Shapes at the Limits of Stability University of Notre Dame, Institute for Structure and Nuclear Astrophysics, South Bend, IN: April 24 <sup>th</sup> , 2017
<i>Mississippi State</i>	2016	Nuclear Shapes at the Limits of Stability Mississippi State University, Starkville, MS: March 2 <sup>nd</sup> , 2017
<i>Midwestern State</i>	2016	Studies of Nuclear Shape Coexistence Midwestern State University, Wichita Falls, TX: November 29 <sup>th</sup> , 2016
<i>NS2016</i>	2016	Shape Coexistence from Lifetime and Branching Ratio Measurements in $^{68,70}\text{Ni}$ Nuclear Structure 2016, Knoxville, TN: July 25 <sup>th</sup> , 2016
<i>NS3</i>	2016	“Radioactive Decay” Lecture at the Nuclear Science Summer School Gave the “Radioactive Decay” lecture as part of the Nuclear Science Summer School aimed at teaching undergraduate students with no prior nuclear physics instruction. National Superconducting Cyclotron Laboratory, Michigan State University, East Lansing, MI: May 17 <sup>th</sup> , 2016
<i>ISTROS 2015</i>	2015	Inelastic Neutron Scattering Studies of $^{76}\text{Ge}$ Isospin, Structure, Reactions and Energy of Symmetry (ISTROS) Conference, Častá, Slovakia: May 4 <sup>th</sup> , 2015
<i>Notre Dame</i>	2015	Inelastic Neutron Scattering Studies Relevant to Neutrinoless Double-Beta Decay University of Notre Dame, Institute for Structure and Nuclear Astrophysics, South Bend, IN: February 16 <sup>th</sup> , 2015
<i>NSCL</i>	2013	Nuclear Structure Relevant to Neutrinoless Double Beta Decay National Superconducting Cyclotron Laboratory, Michigan State University, East Lansing, MI: December 12 <sup>th</sup> , 2013
<i>Illinois Wesleyan</i>	2010	Experiments at the University of Kentucky 7-MV Van de Graaff Accelerator Lab. Illinois Wesleyan University, Bloomington, IL; May 18 <sup>th</sup> – 19 <sup>th</sup> , 2010

### CONTRIBUTED TALKS

- DNP* 2018 Study of  $^{68}\text{Co}$  low-energy structure via  $\beta$  decay including fast-timing measurements  
**B.P. Crider**, C. J. Prokop, S. N. Liddick, M. Alshudifat, A. D. Ayangeakaa, M. P. Carpenter, J. J. Carroll, J. Chen, C. J. Chiara, H. M. David, A. C. Dombos, S. Go, R. Grzywacz, J. Harker, R. V. F. Janssens, N. Larson, T. Lauritsen, R. Lewis, S. J. Quinn, F. Recchia, D. Seweryniak, A. Spyrou, S. Suchyta, W. B. Walters, and S. Zhu. 5<sup>th</sup> Joint Meeting of the APS Division of Nuclear Physics and the Physical Society of Japan, Hilton Waikoloa Village, Hawaii Island; October 23<sup>rd</sup> – 27<sup>th</sup>, 2018
- DNP* 2017 Investigation of  $^{76}\text{Ge}$  structure via Inelastic Scattering Studies  
**B.P. Crider**, S. Mukhopadhyay, S. F. Ashley, A. Kumar, M. T. McEllistrem, E. E. Peters, F. M. Prados-Estévez, S. W. Yates. APS Fall Meeting of the Division of Nuclear Physics 2017, Pittsburgh, PA; October 25<sup>th</sup> – 28<sup>th</sup>, 2017
- DNP* 2015 Excited State Properties in Neutron-rich Nuclear near  $N = 40$   
**B.P. Crider**, C. J. Prokop, S. N. Liddick, M. Alshudifat, A. D. Ayangeakaa, M. P. Carpenter, J. J. Carroll, J. Chen, C. J. Chiara, H. M. David, A. C. Dombos, S. Go, R. Grzywacz, J. Harker, R. V. F. Janssens, N. Larson, T. Lauritsen, R. Lewis, S. J. Quinn, F. Recchia, D. Seweryniak, A. Spyrou, S. Suchyta, W. B. Walters, and S. Zhu. APS Fall Meeting of the Division of Nuclear Physics 2015, Santa Fe, NM; October 28<sup>th</sup> – 31<sup>st</sup>, 2015
- DNP* 2013 Cross Section Measurements of the  $^{76}\text{Ge}(n, n'\gamma)$  Reaction  
**B.P. Crider**, A. Chakraborty, A. Kumar, E.E. Peters, F.M. Prados-Estévez, M.T. McEllistrem, S.W. Yates. APS Fall Meeting of the Division of Nuclear Physics 2013, Newport News, VA; October 23<sup>rd</sup> – 26<sup>th</sup>, 2013
- DNP* 2012 Nuclear Structure Studies of  $^{76}\text{Se}$  and  $^{76}\text{Ge}$  with the  $(n, n'\gamma)$  Reaction  
**B.P. Crider**, A. Chakraborty, A. Kumar, E.E. Peters, F.M. Prados-Estévez, M.T. McEllistrem, S.W. Yates. APS Fall Meeting of the Division of Nuclear Physics 2012, Newport Beach, CA; October 24<sup>th</sup> – 27<sup>th</sup>, 2012
- DNP* 2011 Nuclear Structure Studies of  $^{76}\text{Se}$  and  $^{76}\text{Ge}$  with the  $(n, n'\gamma)$  Reaction  
**B.P. Crider**, A. Chakraborty, A. Kumar, E.E. Peters, F.M. Prados-Estévez, M.T. McEllistrem, S.W. Yates. APS Fall Meeting of the Division of Nuclear Physics 2011, East Lansing, MI; October 26<sup>th</sup> – 29<sup>th</sup>, 2011
- DNP* 2010 Studies of  $A=76$  Nuclei with Inelastic Neutron Scattering  
**B.P. Crider**, S.F. Ashley, A. Chakraborty, M.T. McEllistrem, E.E. Peters, S.W. Yates. APS Fall Meeting of the Division of Nuclear Physics 2010, Santa Fe, NM; November 2<sup>nd</sup> – 6<sup>th</sup>, 2010
- UR* 2005 Exploring Nuclear Structure  
**B. Crider**, University of Richmond, Physics Department Seminar, October 26<sup>th</sup>, 2005

## POSTER PRESENTATIONS

- Nuclear Structure* 2018 Study of  $^{68}\text{Co}$  low-energy structure via  $\beta$  decay  
**B. P. Crider**, C. J. Prokop, S. N. Liddick, M. Alshudifat, A. D. Ayangeakaa, M. P. Carpenter, J. J. Carroll, J. Chen, C. J. Chiara, H. M. David, A. C. Dombos, S. Go, R. Grzywacz, J. Harker, R. V. F. Janssens, N. Larson, T. Lauritsen, R. Lewis, S. J. Quinn, F. Recchia, D. Seweryniak, A. Spyrou, S. Suchyta, W. B. Walters, and S. Zhu, Nuclear Structure 2018, East Lansing, MI; August 6<sup>th</sup> – 10<sup>th</sup>, 2018

- UITI 2015*      2015      Fast Timing Techniques using LaBr<sub>3</sub> Detectors and Digital Electronics  
**B. P. Crider**, S. N. Liddick, C. J. Prokop, 2015 University & Industry Technical Interchange (UITI) Program & Technical Review Meeting (UITI 2015), Ann Arbor; June 2<sup>nd</sup> – 4<sup>th</sup>, 2015
- UITI 2014*      2014      Inelastic Neutron Scattering Studies Relevant to Large-scale Neutrinoless Double-beta Decay Searches  
**B. P. Crider**, J. M. Allmond, M. T. McEllistrem, E. E. Peters, F. M. Prados-Estévez, T. J. Ross, J. R. Vanhoy, and S. W. Yates, 2014 University & Industry Technical Interchange (UITI) Program & Technical Review Meeting (UITI 2014), Walnut Creek, CA; June 3<sup>rd</sup> – 6<sup>th</sup>, 2014
- IEEE NSS/MIC*      2012      Kmax-Based Data Acquisition System for the University of Kentucky Accelerator Laboratory  
**Benjamin P. Crider** and Rodney B. Piercey, 2012 IEEE Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC), N14-100, Anaheim, CA; October 29<sup>th</sup> – November 3<sup>rd</sup>, 2012
- NS*      2012      Nuclear Structure Studies of <sup>76</sup>Se and <sup>76</sup>Ge from Inelastic Neutron Scattering  
**B.P. Crider**, A. Chakraborty, A. Kumar, E.E. Peters, F.M. Prados-Estévez, M.T. McEllistrem, and S.W. Yates. Nuclear Structure 2012, Argonne National Laboratory; August 13<sup>th</sup> – 17<sup>th</sup>, 2012
- CGS14*      2012      Nuclear Structure Studies of <sup>76</sup>Se and <sup>76</sup>Ge from Inelastic Neutron Scattering  
**B.P. Crider**, A. Chakraborty, A. Kumar, E.E. Peters, F.M. Prados-Estévez, M.T. McEllistrem, S.W. Yates. 14<sup>th</sup> International Symposium on Capture Gamma-ray Spectroscopy 2011, Guelph, Canada; August 28<sup>th</sup> – September 2<sup>nd</sup>, 2012
- UK*      2010      Neutrinoless Double Beta Decay and the Experimental Challenges it Presents  
**B.P. Crider**, A. Chakraborty, A. Kumar, E. E. Peters, M. T. McEllistrem, S. W. Yates. 2010 University of Kentucky Graduate Research and Poster Symposium; August 2010
- GRC*      2009      Studies of the Stable A=76 Nuclei with Inelastic Neutron Scattering  
**B.P. Crider**, S. F. Ashley, E. E. Peters, M. T. McEllistrem, S. W. Yates. 2009 Gordon Research Conference on Nuclear Chemistry: "Frontiers of Nuclear Structure through Spectroscopy and Reactions," Colby-Sawyer College, New London, NH; June 21<sup>st</sup> – 26<sup>th</sup> 2009
- UK*      2007      Low-Spin Nuclear Structure Studies in Nearly Spherical Nuclei with Inelastic Neutron Scattering or (*n, n'γ*) Reactions  
**B.P. Crider**, E. Elhami, S. Mukhopadhyay, E. Peters, M. Scheck, J. N. Orce, M. T. McEllistrem, S. W. Yates. 2007 University of Kentucky Graduate Research and Poster Symposium; August 2007
- UR*      2005      Cross-Sectional Probability Study of <sup>238</sup>U using the Silicon Telescope Array for Reaction Studies  
**B. Crider**, M. S. Fetea (University of Richmond), L. A. Bernstein (Lawrence Livermore National Laboratory), R. F. Casten, C. W. Beausang, N. V. Zamfir, A. Heinz, H. Amro, C. Plettner, J. J. Ressler, H. Ai, E. A. Ricard-McCutchan, D. A. Meyer, J. Qian, N. Thomas, G. G "urdal, E. Williams (Yale University), J. A. Church, L. Ahle, J. Punyon (Lawrence Livermore National Laboratory), University of Richmond's Family Weekend Student Research Poster Session; September 23, 2005

*CUR Posters on  
the Hill*

2005 Cross-Sectional Probability Study of  $^{238}\text{U}$  using the Silicon Telescope Array for Reaction Studies

**B. Crider**, M. S. Fetea (University of Richmond), L. A. Bernstein (Lawrence Livermore National Laboratory), R. F. Casten, C. W. Beausang, N. V. Zamfir, A. Heinz, H. Amro, C. Plettner, J. J. Ressler, H. Ai, E. A. Ricard-McCutchan, D. A. Meyer, J. Qian, N. Thomas, G. G. "urdal, E. Williams (Yale University), J. A. Church, L. Ahle, J. Punyon (Lawrence Livermore National Laboratory), Council on Undergraduate Research Posters on the Hill session at the Capitol, Washington, D.C.; April 17, 2005

UR 2005 Cross-Sectional Probability Study of  $^{238}\text{U}$  using the Silicon Telescope Array for Reaction Studies

**B. Crider**, M. S. Fetea (University of Richmond), L. A. Bernstein (Lawrence Livermore National Laboratory), R. F. Casten, C. W. Beausang, N. V. Zamfir, A. Heinz, H. Amro, C. Plettner, J. J. Ressler, H. Ai, E. A. Ricard-McCutchan, D. A. Meyer, J. Qian, N. Thomas, G. G. "urdal, E. Williams (Yale University), J. A. Church, L. Ahle, J. Punyon (Lawrence Livermore National Laboratory), University of Richmond Student Research Symposium; April 15, 2005

DNP 2004 Cross-Sectional Probability Study of  $^{238}\text{U}$  using the Silicon Telescope Array for Reaction Studies

**B. Crider**, M. S. Fetea (University of Richmond), L. A. Bernstein (Lawrence Livermore National Laboratory), R. F. Casten, C. W. Beausang, N. V. Zamfir, A. Heinz, H. Amro, C. Plettner, J. J. Ressler, H. Ai, E. A. Ricard-McCutchan, D. A. Meyer, J. Qian, N. Thomas, G. G. "urdal, E. Williams (Yale University), J. A. Church, L. Ahle, J. Punyon (Lawrence Livermore National Laboratory), Fall Meeting of the Division of Nuclear Physics of the American Physics Society, Chicago, IL; October 27<sup>th</sup> – 30<sup>th</sup>, 2004. CEU Program

VAS 2004 Cross-Sectional Probability Study of  $^{238}\text{U}$  using the Silicon Telescope Array for Reaction Studies

**B. Crider**, M. S. Fetea (University of Richmond), L. A. Bernstein (Lawrence Livermore National Laboratory), R. F. Casten, C. W. Beausang, N. V. Zamfir, A. Heinz, H. Amro, C. Plettner, J. J. Ressler, H. Ai, E. A. Ricard-McCutchan, D. A. Meyer, J. Qian, N. Thomas, G. G. "urdal, E. Williams (Yale University), J. A. Church, L. Ahle, J. Punyon (Lawrence Livermore National Laboratory), Virginia Academy of Science, Research in Undergraduate Institutions Fall Meeting; October 16, 2004

UR 2004 Cross-Sectional Probability Study of  $^{238}\text{U}$  using the Silicon Telescope Array for Reaction Studies

**B. Crider**, M. S. Fetea (University of Richmond), L. A. Bernstein (Lawrence Livermore National Laboratory), R. F. Casten, C. W. Beausang, N. V. Zamfir, A. Heinz, H. Amro, C. Plettner, J. J. Ressler, H. Ai, E. A. Ricard-McCutchan, D. A. Meyer, J. Qian, N. Thomas, G. G. "urdal, E. Williams (Yale University), J. A. Church, L. Ahle, J. Punyon (Lawrence Livermore National Laboratory), University of Richmond Board of Trustees Meeting, Richmond, VA; May 7, 2004

*CUR Posters on  
the Hill*

2004 Fission Fragment Study of  $^{252}\text{Cf}$  using the Yale Moving Tape Collector

**B. Crider**, M. Fetea (University of Richmond), R. F. Casten, C. W. Beausang, N. V. Zamfir, A. Heinz, H. Amro, J. J. Ressler, C. Plettner, H. Ai, E. A. Ricard-McCutchan, A. A. Hecht, D. A. Meyer, W. Rellegert, J. Qian, M. Sciacchitano, R. O. Hughes (Yale University), Council on Undergraduate Research Posters on the Hill session at the Capitol, Washington, D.C.; April 16, 2004

UR 2004 Calculation of the Interatomic Spacing of an NaCl Crystal using X-Ray Scattering

**B. Crider**, University of Richmond Student Research Symposium; April 16, 2004



- DNP*            2003            Fission Fragment Study of  $^{252}\text{Cf}$  using the Yale Moving Tape Collector  
**B. Crider**, M. Fetea (University of Richmond), R. F. Casten, C. W. Beausang, N. V. Zamfir, A. Heinz, H. Amro, J. J. Ressler, C. Plettner, H. Ai, E. A. Ricard-McCutchan, A. A. Hecht, D. A. Meyer, W. Rellegert, J. Qian, M. Sciacchitano, R. O. Hughes (Yale University), Fall Meeting of the Division of Nuclear Physics of the American Physical Society; October 30<sup>th</sup> – November 1<sup>st</sup>, 2003
- VAS*            2003            Fission Fragment Study of  $^{252}\text{Cf}$  using the Yale Moving Tape Collector  
**B. Crider**, M. Fetea (University of Richmond), R. F. Casten, C. W. Beausang, N. V. Zamfir, A. Heinz, H. Amro, J. J. Ressler, C. Plettner, H. Ai, E. A. Ricard-McCutchan, A. A. Hecht, D. A. Meyer, W. Rellegert, J. Qian, M. Sciacchitano, R. O. Hughes (Yale University), Virginia Academy of Science, Research in Undergraduate Institutions Fall Meeting; October 18<sup>th</sup>, 2003
- UR*            2003            Describing Nuclear Rotation in the Rare-Earth Region through Theoretical Models  
**Benjamin Crider**, Trin Chavalittumrong, and Mirela Fetea. University of Richmond's Undergraduate Student Symposium; April 11, 2003

### TEACHING ACTIVITIES

- MSU*            *Spring 2019*        Instructor of Record for PH1133: General Physics III  
 I taught the undergraduate General Physics III service course (for non-physics majors) at Mississippi State University in Spring 2019.
- MSU*            *Fall 2018*            Instructor of Record for PH1133: General Physics III  
 I taught the undergraduate General Physics III service course (for non-physics majors) at Mississippi State University in Fall 2018.
- MSU*            *Spring 2018*        Instructor of Record for PH1133: General Physics III  
 I taught the undergraduate General Physics III service course (for non-physics majors) at Mississippi State University in Spring 2018.
- MSU*            *Fall 2017*            Instructor of Record for PH4113/PH6113: Electronic Circuits for Scientists  
 I taught the split level graduate and undergraduate electronics course at Mississippi State University in Fall 2017.
- UK*            2008-2014        Tours of UK Accelerator Laboratory  
 Approximately twice a year, I gave tours of the University of Kentucky Accelerator Laboratory to visitors ranging from local high-school and college students to members of the UK administrative staff and former graduates of our laboratory
- UK*            *Spring 2008*        PHY 213 General Physics  
 I was the Teaching Assistant teaching recitation sections of this course under the primary instructor, Dr. Gang Cao. I taught three recitations a week going over homework problems, had two office hours each week, and graded homeworks and exams.

*UK*                    *Spring 2007*        PHY 232 General University Physics and PHY 242 General University Physics Laboratory

I was the Teaching Assistant teaching in the evening sections of this course under the primary instructor, Steve Ellis. I taught two recitations a week going over homework problems, ran the lab session by myself, had 2 office hours each week, and graded homeworks, lab reports, and exams.

*UK*                    *Fall 2006*            PHY 231 General University Physics and PHY 241 General University Physics Laboratory

I was the Teaching Assistant teaching in the evening sections of this course. I taught two recitations a week going over homework problems, ran the lab session by myself, and graded homeworks, lab reports, and exams.