

## **James Brown**

Physics Department

Tel: (765) 361-6282

Wabash College

Email: brownj@wabash.edu

301 W. Wabash Ave

Crawfordsville, IN 47933

## **Education The University Of Michigan**

### **Horace M. Rackham Graduate School**

- Ph. D. Physics, 1993
- Masters of Science, Physics, 1990

### **Kalamazoo College**

- Bachelor of Arts, June 1987

*Magna Cum Laude, Honors in Physics, Phi Beta Kappa*

Foreign Study in Hannover, Germany

## **Experience**

**7/03-present**

**Wabash College**

**Crawfordsville, IN**

- Associate Professor and Chair (7/11-pres.)
- Associate Professor (7/07-pres.)

**8/08-8/09**

• AAAS Science Policy Fellow at National Science Foundation (Sabbatical)

- Assistant Professor (7/03-7/07)

- Acting department chair (2004/5)

• National Science Foundation grant \$120,000 (2009-11) to build a portion of a large neutron detector array with undergraduate students

• National Science Foundation grant \$83,586 (2006-8) to support MoNA related research with undergraduate students

• Secretary of the Academic Program Committee (2005/6)

• Executive Director of the MoNA collaboration (2005/6)

**7/98-6/03**

**Millikin University**

**Decatur, IL**

- Associate Professor and Chair (9/02-6/03)

- Assistant Professor (7/98-9/02)
  - Selected, and oversaw installation of a new 0.5 m reflecting telescope in the Requarth Observatory at Millikin University, purchased the CCD camera, spectrometer and other equipment for the observatory.
  - Awarded \$93,000 National Science Foundation grant to construct a layer of the Modular Neutron Array (MONA), a part of a million dollar collaboration among nine universities and colleges.
  - Member of the Illinois Articulation Initiative Statewide Physics Panel
  - Established “Journeys in the Arts and Sciences”, a faculty lecture series

8/96-6/98      Allegheny College      Meadville, PA

- Visiting Assistant Professor

8/93-8/96 National Superconducting Cyclotron Laboratory E. Lansing, MI

- Visiting Research Associate
  - Worked in A1200 group, specializing in radioactive beams
  - Conducted first inverse kinematics ( $p,n$ ) type reactions with a radioactive secondary beam in the A1200, for the measurement of  $B(GT)$  values important in astrophysics

**5/89 - 8/93**      **The University of Michigan**      **Ann Arbor, MI**

- Research Assistant to Dr. Fred Becchetti

- Measured elastic scattering of  $^{18}\text{F}^m$  using both the A1200 fragment separator and the UM-Solenoid at MSU-NSCL

**9/88-1/90** • Head Teaching Assistant for elementary labs.

- Head Teaching Assistant for elementary 1

**9/87-8/88 Radiophysics Inc. Boulder, CO**

- Investigated Jovian Radio Emissions using data from Voyagers I and II

**6/87-9/87      Jet Propulsion Laboratory      Pasadena, CA**

- Technical Staff, developed debugging tools for parallel computing system

## **Professional Affiliations**

- American Association of Physics Teachers
- American Physical Society,
  - Division of Nuclear Physics
  - Forum on Education
  - Forum on Physics and Society
- American Association for the Advancement of Science
- Phi Beta Kappa

## **Publications in Refereed Journals**

### **2011**

“Observation of a two-neutron cascade from a resonance in  $^{24}\text{O}$ ”, C. R. Hoffman, T. Baumann, J. Brown, P. A. DeYoung, J. E. Finck, N. Frank, J. Hinnefeld, S. Mosby, W. A. Peters, W. F. Rogers, A. Schiller, J. Snyder, A. Spyrou, S. L. Tabor, M. Thoennessen, Phys. Rev. C 83, 031303 (2011)

“Neutron knockout of  $^{12}\text{Be}$  populating unbound states in  $^{11}\text{Be}$ ” W. A. Peters, T. Baumann, B. A. Brown, J. Brown, P. A. DeYoung, J. E. Finck, N. Frank, K. L. Jones, J. L. Lecouey, B. Luther, G. F. Peaslee, W. F. Rogers, A. Schiller, M. Thoennessen, J. A. Tostevin, K. Yoneda, Phys. Rev. C 83, 031303 (2011)

### **2010**

“First evidence for a virtual  $^{18}\text{B}$  ground state”, A. Spyrou, T. Baumann, D. Bazin, G. Blanchon, A. Bonaccorso, E. Breitbach, J. Brown, G. Christian, A. DeLine, P. A. DeYoung, J. E. Finck, N. Frank, S. Mosby, W. A. Peters, A. Russel, A. Schiller, M. J. Strongman, M. Thoennessen, Phys. Lett. B 683, 129 (2010)

“First observation of excited states in  $^{12}\text{Li}$ ” C. C. Hall, E. M. Lunderberg, P. A. DeYoung, T. Baumann, D. Bazin, G. Blanchon, A. Bonaccorso, E. Breitbach, B. A. Brown, J. Brown, G. Christian, D. H. Denby, J. Finck, N. Frank, A. Gade, J. Hinnefeld, C. R. Hoffman, B. Luther, S. Mosby, W. A. Peters, A. Spyrou, , M. Thoennessen, Phys. Rev. C 81, 021302 (2010)

### **2009**

“Evidence for a doubly magic  $^{24}\text{O}$ ”, C. R. Hoffman, T. Baumann, D. Bazin, J. Brown, G. Christian, D. H. Denby, P. A. DeYoung, J. E. Finck, N. Frank, J. Hinnefeld, S. Mosby, W. A. Peters, W. F . Rogers, A. Schiller, A. Spyrou, M. J. Scott, S. L. Tabor, M. Thoennessen, P. Voss, Phys. Lett. B 672, 17 (2009)

“Disappearance of the N=14 shell”, M. J. Strongman, A. Spyrou, C. R. Hoffman, T. Baumann, D. Bazin, J. Brown, P. A. DeYoung, J. E. Finck, N. Frank, S. Mosby, , W. F. Rogers, A. Schiller, S. L. Tabor, M. Thoennessen, Phys. Rev. C 80, 021302 (2009)

## 2008

“Production of nuclei in neutron unbound states via primary fragmentation of  $^{48}\text{Ca}$ ”, G. Christian, W. A. Peters, D. Absalon, D. Albertson, T. Baumann, D. Bazin, E. Breitbach, J. Brown, P. L. Cole, D. Denby, P. A. DeYoung, J. E. Finck, N. Frank, A. Fritsch, C. Hall, A. M. Hayes, J. Hinnefeld, C. R. Hoffman, R. Howes, B. Luther, E. Mosby, S. Mosby, D. Padilla, P. V. Pancella, G. Peaslee, W. F. Rogers, A. Schiller, M. J. Strongman, M. Thoennessen, L. O. Wagner, Nucl. Phys. A801, 101 (2008)

“Ground state energy and width of  $^7\text{He}$  from  $^8\text{Li}$  proton knockout”, D. H. Denby, P. A. DeYoung, T. Baumann, D. Bazin, E. Breitbach, J. Brown, N. Frank, A. Gade, C. C. Hall, J. Hinnefeld, C. R. Hoffman, R. Howes, R. A. Jenson, B. Luther, S. M. Mosby, C. W. Olson, W. A. Peters, A. Schiller, A. Spyrou, M. Thoennessen, Phys. Rev. C 78, 044303 (2008)

“Neutron decay spectroscopy of neutron-rich oxygen isotopes”, N. Frank, T. Baumann, D. Bazin, B. A. Brown, J. Brown, P. A. DeYoung, J. E. Finck, A. Gade, J. Hinnefeld, R. Howes, J.-L. Lecouey, B. Luther, W. A. Peters, H. Scheit, A. Schiller, M. Thoennessen, J. Tostevin, Nucl. Phys. A813, 199 (2008)

“Determination of the  $N = 16$  Shell Closure at the Oxygen Drip Line” C. R. Hoffman, T. Baumann, D. Bazin, J. Brown, G. Christian, P. A. DeYoung, J. E. Finck, N. Frank, J. Hinnefeld, R. Howes, P. Mears, E. Mosby, S. Mosby, J. Reith, B. Rizzo, W. F. Rogers, G. Peaslee, W. A. Peters, A. Schiller, M. J. Scott, S. L. Tabor, M. Thoennessen, P. J. Voss, T. Williams, Phys. Rev. Lett. 100, 152502 (2008)

## 2007

“Selective Population and Neutron Decay of an Excited State of  $^{23}\text{O}$ ” A. Schiller, N. Frank, T. Baumann, D. Bazin, B. A. Brown, J. Brown, P. A. DeYoung, J. E. Finck, A. Gade, J. Hinnefeld, R. Howes, J.-L. Lecouey, B. Luther, W. A. Peters, H. Scheit, M. Thoennessen, J. A. Tostevin, Phys. Rev. Lett. 99, 112501 (2007)

“Breakup of  $^6\text{He}$  incident on  $^{209}\text{Bi}$  near the Coulomb barrier” J. J. Kolata, H. Amro, F. D. Becchetti, J. A. Brown, P. A. DeYoung, M. Hencheck, J. D. Hinnefeld, G. F. Peaslee, A. L. Fritsch, C. Hall, U. Khadka, Patrick J. Mears, P. O’Rourke, D. Padilla, J. Rieth, T. Spencer, T. Williams, Phys. Rev. C 75, 031302 (2007)

“Nuclear reactions with radioactive, isomer beams: Coulomb excitation of  $^{18}\text{F}_{g,s}$  and its  $J^\pi = 5^+$  isomer  $^{18}\text{F}^*$  using a large position-sensitive NaI array” J. A. Zimmerman, F. D. Becchetti, H. C. Griffin, D. A. Roberts, M. Y. Lee, T. W. O’Donnell, J. A. Brown, R. M. Ronningen, T. Glasmacher, R. W. Ibbotson, H. Scheit, B. Pritychenko, D. W. Anthony, P. A. Lofy, M. Steiner, Nucl. Instrum. Methods Phys. Res. A579, 476 (2007)

“ $^{7}\text{Be}$ -induced  $\alpha$ -transfer reaction on  $^{12}\text{C}$ ”, H. Amro, F. D. Becchetti, Y. Chen, H. Jiang, M. Ojaruega, M. J. Golobish, H. C. Griffin, J. J. Kolata, B. Skorodumov, G. Peaslee, P. A. DeYoung, P. Mears, D. Denby, J. Brown, J. D. Hinnefeld, A. M. Moro, Eur. Phys. J. Special Topics 150, 1 (2007)

## 2006

“Measurement of the Gamow-Teller Strength Distribution in  $^{58}\text{Co}$  via the  $^{58}\text{Ni}(\text{t}, ^3\text{He})$  reaction at 115 MeV/nucleon” A. L. Cole, H. Akimune, Sam M. Austin, D. Bazin, A. M. van den Berg, G. P. A. Berg, J. Brown, I. Daito, Y. Fujita, M. Fujiwara, S. Gupta, K. Hara, M. N. Harakeh, J. Janecke, T. Kawabata, T. Nakamura, D. A. Roberts, B. M. Sherrill, M. Steiner, H. Ueno, and R. G. T. Zegers, Phys. Rev. C 74, 034333 (2006)

“Reaction and proton-removal cross sections of  $^6\text{Li}$ ,  $^7\text{Be}$ ,  $^{10}\text{B}$ ,  $^{9,10,11}\text{C}$ ,  $^{12}\text{N}$ ,  $^{13,15}\text{O}$  and  $^{17}\text{Ne}$  on Si at 15 to 53 MeV/nucleon”, R. E. Warner, F. Carstoiu J. A. Brown, F. D. Becchetti, B. Davids, A. Galonsky, M. Horoi, J. J. Kolata, A. Nadasen, D. A. Roberts, R. M. Ronningen, C. Samanta, J. Schwarzenberg, M. Steiner, and K. Subotic, Phys. Rev. C 74, 014605 (2006)

“The ( $\text{t}, ^3\text{He}$ ) and ( $^3\text{He}, \text{t}$ ) reactions as probes of Gamow-Teller strength”

R. G. T. Zegers, H. Akimune, S. M. Austin, D. Bazin, A. M. van den Berg, G. P. A. Berg, B. A. Brown, J. Brown, A. L. Cole, I. Daito, Y. Fujita, M. Fujiwara, S. Gales, M. N. Harakeh, H. Hashimoto, R. Hayami, G. W. Hitt, M. E. Howard, M. Itoh, J. Janecke, T. Kawabata, K. Kawase, M. Kinoshita, T. Nakamura, K. Nakanishi, S. Nakayama, S. Okumura, W. A. Richter, D. A. Roberts, B. M. Sherrill, Y. Shimbara, M. Steiner, M. Uchida, H. Ueno, T. Yamagata, M. Yosoi, Phys. Rev. C 74, 024309 (2006)

## 2005

“Fabrication of a modular neutron array: A collaborative model to undergraduate research”, R. H. Howes, T. Baumann, M. Thoennessen, J. Brown, P. A. DeYoung, J. Finck, J. Hinnefeld, K. W. Kemper, B. Luther, P. V. Pancella, G. F. Peaslee, W. F. Rogers, and S. Tabor, American Journal of Physics (March 2005)

“Weak interaction strengths for supernovae calculations via the ( $\text{t}, ^3\text{He}$ ) reaction on medium-heavy nuclei”, R. G. T. Zegers, A. L. Cole, H. Akimune, S. M. Austin, D. Bazin, A. M. van den Berg, G. P. A. Berg, J. Brown, I. Daito, Y. Fujita, M. Fujiwara, K. Hara, M. N. Harakeh, G. W. Hitt, M. E. Howard, J. Janecke, T. Kawabataj T. Nakamura, H. Ueno, H. Schatz, B. M. Sherrill, M. Steiner, Nuclear Physics A758, 67c (2005)

“Construction of a modular large-area neutron detector for the NSCL” T. Baumann, J. Boike, J. Brown, M. Bullinger, J. P. Bychoswki, S. Clark, K. Daum, P. A. DeYoung, J. V. Evans, J. Finck, N. Frank, A. Grant, J. Hinnefeld, G. W. Hitt, R. H. Howes, B. Isselhardt, K. W. Kemper, J. Longacre, Y. Lu, B. Luther, S. T. Marley, D. McCollum, E. McDonald, U. Onwuemene, P. V. Pancella, G. F. Peaslee, W. A. Peters, M. Rajabali, J. Robertson, W. F. Rogers, S. L. Tabor, M. Thoennessen, E. Tryggestad, R. E. Turner, P. J. VanWylen, and N. Walker, Nucl. Instr. and Meth. A543, 517-527 (2005)

## 2004

“Proton removal from  $^8\text{B}$ ,  $^9\text{C}$ , and  $^{12}\text{C}$  on Si at 20-70 MeV/nucleon”, R. E. Warner, F. D. Becchetti, J. A. Brown, A. Galonsky, J. H. Kelley, A. Nadasen, R. M. Ronningen, J. A. Tostevin, J. S. Winfield, P. Zecher, Phys. Rev. C 69, 024612 (2004)

## 2002

“Gamma-ray spectroscopy with a low-energy  $^3\text{He}$  radioactive ion beam” S. M. Vincent, A. Aprahamian, J. J. Kolata, L. O. Lamm, V. Guimaraes, R. C. deHaan, D. Peterson, P. Santi, A. Teymurazyan, F. D. Becchetti, T. W. O’Donnell, M. Lee, D. A. Roberts, J. A. Zimmerman, J. A. Brown, Nucl. Instrum. Methods Phys. Res. A491, 426 (2002)

"Energy Dependence of the Total Reaction Cross Section of Isomeric  $^{18}\text{F}^m$  on Silicon below 400 MeV" D. A. Roberts, F. D. Becchetti, J. Janecke, M. Y. Lee, T. W. O'Donnell, K. Pham, J. A. Brown, R. E. Warner, R. M. Ronningen, and H. W. Wilschut, Physical Review C65, 044605 (2002)

"Elastic Scattering and Transfer in the  $^8\text{Li} + ^{209}\text{Pb}$  System Near the Coulomb Barrier" J. J. Kolata, V. Z. Goldberg, L. O. Lamm, M. G. Marino, C. J. O'Keeffe, G. Rogachev, E. F. Aguilera, H. Garcia-Martinez, E. Martinez-Quiroz, P. Rosales, F. D. Becchetti, T. W. O'Donnell, D. A. Roberts, J. A. Brown, P. A. DeYoung, J. D. Hinnefeld, and S. A. Shaheen, Physical Review C65, 054616 (2002)

## 2001

"Total Reaction and Neutron-Removal Cross Sections of (30-60)A MeV Be Isotopes on Si and Pb" R. E. Warner, M. H. McKinnon, J. S. Needleman, N. C. Shaner, F. D. Becchetti, D. A. Roberts, A. Galonsky, R. M. Ronningen, M. Steiner, J. A. Brown, J. J. Kolata, A. Nadasen, and K. Subotic, Physical Review C64, 044611 (2001)

"Production of A=6, 7 Nuclides in the  $\alpha+\alpha$  Reaction and Cosmic Ray Nucleosynthesis" D. J. Mercer, S. M. Austin, J. A. Brown, S. A. Danczyk, S. E. Hirzebruch, J. H. Kelley, T. Suomijarvi, D. A. Roberts, and T. P. Walker, Physical Review C63, 065805 (2001)

## 2000

"Total Reaction and Neutron-Removal Cross Sections of (30-60)A MeV He and Li Isotopes on Pb" R. E. Warner, M. H. McKinnon, N. C. Shaner, F. D. Becchetti, A. Nadasen, D. A. Roberts, J. A. Brown, A. Galonsky, J. J. Kolata, R. M. Ronningen, M. Steiner, and K. Subotic, Physical Review C62, 024608 (2000)

## 1999

"Isovector Giant Resonances in  $^6\text{He}$ ,  $^{12}\text{B}$ ,  $^{90}\text{Y}$ ,  $^{120}\text{In}$ , and  $^{208}\text{Tl}$  Observed in the ( $^7\text{Li}, ^7\text{Be}$ ) Charge-Exchange Reaction" T. Annakkage, J. Janecke, J. S. Winfield, G. P. A. Berg, J. A. Brown, G. Crawley, S. Danczik, M. Fujiwara, D. J. Mercer, K. Pham, D. A. Roberts, J. Stasko, G. H. Yoo, Nucl. Phys. A648, 3 (1999)

"Proton Scattering by Short Lived Sulfur Isotopes" F. Marechal, T. Suomijarvi, Y. Blumenfeld, A. Azhari, E. Bauge, D. Bazin, J. A. Brown, P. D. Cottle, J. P. Delaroche, M. Fauerbach, M. Girod, T. Glasmacher, S. E. Hirzebruch, J. K. Jewell, J. H. Kelley, K. W. Kemper, P. F. Mantica, D. J. Morrissey, L. A. Riley, J. A. Scarpaci, H. Scheit, M. Steiner, Physical Review C60, 034615 (1999)

"Proton Scattering from the Unstable Neutron-Rich Nucleus  $^{43}\text{Ar}$ " F. Marechal, T. Suomijarvi, Y. Blumenfeld, A. Azhari, D. Bazin, J. A. Brown, P. D. Cottle, M. Fauerbach, T. Glasmacher, S. E. Hirzebruch, J. K. Jewell, J. H. Kelley, K. W. Kemper, P. F. Mantica, D. J. Morrissey, L. A. Riley, J. A. Scarpaci, H. Scheit, M. Steiner, Physical Review C60, 064623 (1999)

"Isotope Yields with a Solenoid-Based Fragment Mass Analysis System - Prospects for Exotic Isotope Studies in the  $10 \leq Z \leq 30$  Range" T. W. O'Donnell, F. D. Becchetti, J. Brown, J. W. Janecke, M. Y. Lee, R. S. Raymond, D. A. Roberts, R. S. Tickle, H. C. Griffin, R. M. Ronningen, Nucl. Instrum. Methods Phys. Res. A422, 513 (1999)

"Population of  $^{10}\text{Li}$  by Fragmentation" M. Thoennessen, S. Yokoyama, A. Azhari, T. Baumann, J. A. Brown, A. Galonsky, P. G. Hansen, J. H. Kelley, R. A. Kryger, E. Ramakrishnan, P. Thirolf, Physical Review C59, 111 (1999)

"Proton Decay of States in  $^{11}\text{N}$ " A. Azhari, T. Baumann, J. A. Brown, M. Hellstrom, J. H. Kelley, R. A. Kryger, D. J. Millener, H. Madani, E. Ramakrishnan, D. E. Russ, T. Suomijarvi, M. Thoennessen, S. Yokoyama, Physical Review C59, 111 (1999)

## 1998

"Probing the Halo Structure of  $^{19,17,15}\text{C}$  and  $^{14}\text{B}$ " D. Bazin, W. Benenson, B. A. Brown, J. Brown, B. Davids, M. Fauerbach, P. G. Hansen, P. Mantica, D. J. Morrissey, C. F. Powell, B. M. Sherrill, M. Steiner, Physical Review C57, 2156 (1998)

Breakup of  $^{11}\text{Be}$ : Prompt or delayed? J. E. Bush, P. A. Hausladen, D. P. Balamuth, K. R. Pohl, D. Bazin, J. A. Brown, J. A. Caggiano, L. L. Chen, B. S. Davids, D. J. Morrissey, B. M. Sherrill, M. Thoennessen, Physical Review Letters 81, 61 (1998)

"Gamow-Teller Strengths from ( $t, ^3\text{He}$ ) Charge-Exchange Reactions on Light Nuclei" I. Daito, H. Akimune, S. M. Austin, D. Bazin, G. P. A. Berg, J. A. Brown, B. S. Davids, Y. Fujita, H. Fujimura, M. Fujiwara, R. Hazama, T. Inomata, K. Ishibashi, J. Janecke, S. Nakayama, K. Pham, D. A. Roberts, B. M. Sherrill, M. Steiner, A. Tamii, M. Tanaka, H. Toyokawa, M. Yosoi, Physics Letters 418B, 27 (1998)

"Reaction Cross Sections in Si of Light Proton-Halo Candidates  $^{12}\text{N}$  and  $^{17}\text{Ne}$ " R. E. Warner, H. Thirumurthy, J. Woodroffe, F. D. Becchetti, J. A. Brown, B. S. Davids, A. Galonsky, J. J. Kolata, J. J. Kruse, M. Y. Lee, A. Nadasen, T. W. O'Donnell, D. A. Roberts, R. M. Ronningen, C. Samanta, P. Schwandt, J. von Schwarzenberg, M. Steiner, K. Subotic, J. Wang, J. A. Zimmerman, Nucl. Phys. A635, 292 (1998)

## 1997

"( $t, ^3\text{He}$ ) Reaction; New tool for studying spin-isospin excitations in neutron rich nuclei," I. Daito, H. Akimune, S. M. Austin, D. Bazin, G. P. A. Berg, J. A. Brown, B. S. Davids, Y. Fujita, H. Fujimura, M. Fujiwara, R. Hazama, T. Inomata, K. Ishibashi, J. Janecke, S. Nakayama, K. Pham, D. A. Roberts, B. M. Sherrill, M. Steiner, A. Tamii, M. Tanaka, H. Toyokawa, and M. Yosoi. Nuclear Instruments and Methods A397, 465-471

"Elastic and Inelastic Scattering of Protons on  $^{38}\text{S}$  in Inverse Kinematics," T. Suomijävi, J. H. Kelley, S. E. Hirzbruch, A. Azhari, D. Bazin, Y. Blumenfeld, J. A. Brown, P. D. Cottle, S. Danczik, M. Fauerbach, T. Glasmacher, J. K. Jewell, K. W. Kemper, F. Maréchal, D. J. Morrissey, S. Ottini, J. A. Scarpaci, and P. Thirolf. Nuclear Physics A616 295c-302c

"Proton Scattering on the Unstable  $^{38}\text{S}$  Nucleus: Isovector contribution to the  $2_1^+$  State," J. H. Kelley, T. Suomijarvi, S. E. Hirzebruch, A. Azhari, D. Bazin, Y. Blumenfeld, J. A. Brown, P. D. Cottle, S. Danczik, M. Fauerbach, T. Glasmacher, J. K. Jewell, K. W. Kemper, F. Marechal, D. J. Morrissey, S. Ottini, J. A. Scarpaci, and P. Thirolf. Physical Review C56, R1206

"Isospin Dependence of Collective Transverse Flow in Nuclear Collisions," R. Pak, W. Benenson, O. Bjarki, J. A. Brown, S. A. Hannuschke, R. A. Lacey, Bao-An Li, A. Nadasen, E. Norbeck, P. Pogodin, D. E. Russ, M. Steiner, N. T. B. Stone, A. M. Vander Molen, G. D. Westfall, L. B. Yang, and S. J. Yennello. Physical Review Letters 78, 1022

"Isospin Dependence of the Balance Energy," R. Pak, Bao-An Li, W. Benenson, O. Bjarki, J. A. Brown, S. A. Hannuschke, R. A. Lacey, D. J. Magestro, A. Nadasen, E. Norbeck, D. E. Russ, M. Steiner, N. T. B. Stone, A. M. Vander Molen, G. D. Westfall, L. B. Yang, and S. J. Yennello. Physical Review Letters 78, 1026

## 1996

"Measurement of the  $^1\text{H}(^6\text{He}, ^6\text{Li})\text{n}$  reaction at  $0^\circ$ ," J. A. Brown, D. Bazin, W. Benenson, J. Caggiano, M. Hellström, J. H. Kelley, R. A. Kryger, B. M. Sherrill, M. Steiner, D. J. Morrissey, R. Pfaff, and C. F. Powell. Physical Review C54, R2105

"New Region of Deformation: The neutron-rich sulfur isotopes," H. Scheit, T. Glasmacher, B. A. Brown, J. A. Brown, P. D. Cottle, P. G. Hansen, R. Harkewicz, M. Hellstrom, R. W. Ibbotson, J. K. Jewell, K. W. Kemper, D. J. Morrissey, M. Steiner, P. Thirolf, and M. Thoennessen. Physical Review Letters 77, 3967

"Total Reaction and 2n-Removal Cross Sections of 20-60A MeV  $^{4,6,8}\text{He}$ ,  $^{6-9,11}\text{Li}$ , and  $^{10}\text{Be}$  on Si," R. E. Warner, R. A. Patty, P. M. Voyles, A. Nadasen, F. D. Becchetti, J. A. Brown, H. Esbensen, A. Galonsky, J. J. Kolata, J. Kruse, M. Y. Lee, R. M. Ronningen, P. Schwandt, J. von Schwarzenberg, B. M. Sherrill, K. Subotic, J. Wang, P. Zecher. Physical Review C54, 1700

"Structure of the Neutron-Halo Nucleus  $^6\text{He}$ ," J. Janecke, T. Annakkage, G. P. A. Berg, B. A. Brown, J. A. Brown, G. Crawley, S. Danczik, M. Fujiwara, D. J. Mercer, K. Pham, D. A. Roberts, J. Stasko, J. S. Winfield, G. H. Yoo. Physical Review C54, 1070

"Study of the Breakup Reaction  $^8\text{B} \rightarrow ^7\text{Be} + \text{p}$ : Absorption effects and E2 strength," J. H. Kelley, S. M. Austin, A. Azhari, D. Bazin, J. A. Brown, H. Esbensen, M. Fauerbach, M. Hellstrom, S. E. Hirzebruch, R. A. Kryger,

D. J. Morrissey, R. Pfaff, C. F. Powell, E. Ramakrishnan, B. M. Sherrill, M. Steiner, T. Suomijarvi, and M. Thoennessen. Physical Review Letters **77**, 5020

“Isovector Giant Resonances in  $^6\text{He}$ ,  $^{12}\text{B}$ ,  $^{90}\text{Y}$ ,  $^{120}\text{In}$  and  $^{208}\text{Tl}$ ,” J. Jänecke, T. Annakkage, K. Pham, D. A. Roberts, J. A. Brown, G. Crwaley, S. Danczik, D. J. Mercer, J. Stasko, J. S. Winfield, G. H. Yoo, G. P. A. Berg, and M. Fujiwara. Nuclear Physics **A599**, 191c-196c

“Upper limit on the lifetime of  $^{16}\text{B}$ ,” R. A. Kryger, A. Azhari, J. Brown, J. Caggiano, M. Hellström, J. H. Kelley, B. M. Sherrill, M. Steiner, and M. Thoennessen. Physical Review **C53**, 1971-1973

“First Study of Heavy-ion Mirror Charge Exchange,” M. Steiner, Sam M. Austin, W. Benenson, C. A. Bertulani, J. A. Brown, M. Fauerbach, M. Hellström, E. Kashy, J. H. Kelley, R. A. Kryger, T. Kubo, N. A. Orr, R. Pfaff, B. M. Sherrill, M. Thoennessen, S. J. Yennello, B. M. Young, P. D. Zecher, D. J. Morrissey, and C. F. Powell. Physical Review Letters **76**, 26-31, 3042 (E)

### 1995

“Proton Scattering from an Excited Nucleus ( $^{18}\text{F}^m$ ,  $J^\pi=5^+$ ,  $E_X=1.1$  MeV) Using a  $\gamma$ -Ray-Tagged Secondary Isomeric Nuclear Beam,” J. A. Brown, F. D. Becchetti, J. Jänecke, D. A. Roberts, D. W. Litzenberg, T. W. O’Donnell, and R. E. Warner. Physical Review **C51**, 1312-1319

“The  $^8\text{Li}(\alpha, n)^{11}\text{B}$  reaction and primordial nucleosynthesis,” X. Gu, R. N. Boyd, M. M. Farrell, J. D. Kalen, C. A. Mitchell, J. J. Kolata, M. Belbot, K. Lamkin, K. Ashktorab, F. D. Becchetti, J. Brown, D. Roberts, K. Kimura, I. Tanihata, K. Yoshida, and M. S. Islam. Physics Letters **B343**, 31-35

“The one-neutron halo of  $^{19}\text{C}$ ,” D. Bazin, J. Brown, M. Fauerbach, M. Hellström, S. E. Hirzebruch, J. H. Kelley, R. A. Kryger, D. J. Morrissey, R. Pfaff, C. F. Powell, B. M. Sherrill, and M. Thoennessen. Physical Review Letters **74**, 3569-72

“Unusual energy dependence of the Total Nuclear Reaction Cross Section for a Secondary Isomeric Nuclear Beam  $^{18}\text{F}^m$  ( $J^\pi=5^+$ ,  $E_X=1.1$  MeV),” D. A. Roberts, F. D. Becchetti, J. A. Brown, J. Jänecke, K. Pham, T. O’Donnell, R. E. Warner, R. Ronningen, and H. Wilschut. Nuclear Physics **A588**, 247c-252c

“Evidence for a proton halo in  $^8\text{B}$ : Enhanced total reaction cross sections at 20 to 60 MeV/nucleon,” R. E. Warner, J. H. Kelley, F. D. Becchetti, J. A. Brown, C. L. Carpenter, A. Galonsky, J. Kruse, A. Muthukrishnan, A. Nadases, R. M. Ronningen, P. Schwandt, B. M. Sherrill, J. Wang, and J. S. Winfield. Physical Review **C52**, R1166-70

“Cross Sections and Reaction Rates of d +  $^8\text{Li}$  Reactions Involved in Big Bang Nucleosynthesis,” M. J. Balbes, M. M. Farrell, R. N. Boyd, X. Gu, M. Hencheck, J. D. Kalen, C. A. Mitchell, J. J. Kolata, K. Lamkin, R. Smith, R. Tighe, K. Ashktorab, F. D. Becchetti, J. Brown, D. Roberts, T.-F. Wang, D. Humphrey, G. Vourvopoulos, and M. S. Islam. Nuclear Physics **A584**, 315

### 1993

“Installation and In-Beam Tests of Large-Bore 7 Tesla Superconducting Solenoid Reaction-Product Collector,” F. D. Becchetti, J. Bajema, J. A. Brown, F. Brunner, H. Griffin, J. W. Jänecke, T. W. O’Donnell, R. S. Raymond, D. A. Roberts, R. S. Tickle, R. M. Ronningen, H. Laumer, N. Orr, A. Zeller, and R. E. Warner. Nuclear Instruments and Methods **B79**, 326-329.

“Cross Section for the Primordial Reaction  $^8\text{Li}(\text{p}, \text{n})^8\text{Be}_{(\text{g. s.})}$  at  $E_{c.m.}=1.5$  MeV,” D. D. Caussyn, N. R. Fletcher, K. W. Kemper, E. E. Towers, J. J. Kolata, K. Lamkin, R. J. Smith, F. D. Becchetti, J. A. Brown, J. W. Jänecke, D. A. Roberts, D. L. Gray. Physical Review **C47**, 387-391.

“Systematics of  $^8\text{Li}$  Induced Radioactive Beam Reactions:  $E=13-20$  MeV,” F. D. Becchetti, W. Z. Liu, K. Ashktorab, J. Bajema, J. A. Brown, J. W. Jänecke, D. A. Roberts, J. J. Kolata, K. A. Lamkin, A. Morsad, R. J. Smith, X. J. Kong, R. E. Warner. Physical Review **C48**, 308

“Elastic Scattering of 318 MeV  $^7\text{Li}$  from  $^{12}\text{C}$  and  $^{28}\text{Si}$ : Unique phenomenological and folding model potentials,” A. Nadases, T. Stevens, J. Farhat, J. Bruscoe, P. Schwandt, J. S. Winfield, G. Yoo, N. Anataraman, F. D. Becchetti, J. A. Brown, D. Hotz, J. W. Jänecke, D. A. Roberts. Physical Review **C47**, 674-681.

“ $^2\text{H}$  Induced Reactions on  $^8\text{Li}$  and Primordial Nucleosynthesis,” M. J. Balbes, M. M. Farrell, R. N. Boyd, X. Gu, M. Hencheck, R. Tighe, K. Ashktorab, F. D. Becchetti, J. A. Brown, D. Roberts, T.-F. Wang, D. Humphrey, G. Vourvopoulos, M. S. Islam. Physical Review Letters 71, 3931-3934

## 1992

“Light Particle Emission at  $0^\circ$  in the reaction  $^{20}\text{Ne} + ^{181}\text{Ta}$  at  $E/A = 85$  MeV,” D. A. Roberts, F. D. Becchetti, J. W. Jänecke, J. A. Brown, L. Shin, Z. Yin and A. Nadasen. Physical Review **C45**, 726-737.

“Reaction Rates for  $^8\text{Li}(p,\alpha)$  and  $^8\text{Li}(p,\alpha n)$  and Their Effect on Primordial Nucleosynthesis,” F. D. Becchetti, J. A. Brown, J. W. Jänecke, W. Z. Liu, D. A. Roberts, J. J. Kolata, R. J. Smith, K. Lamkin, A. Morsad, R. E. Warner, R. N. Boyd, J. D. Kalen. Nuclear Physics **A550**, 507-516

## 1991

“Coulomb Excitation of  $^8\text{Li}$ ,” J. A. Brown, F. D. Becchetti, J. W. Jänecke, K. Ashktorab, D. A. Roberts, J. J. Kolata, R. J. Smith, K. Lamkin, and R. E. Warner. Physical Review Letters **66**, 2452.

“Scattering of  $^6\text{He}$  from  $^{197}\text{Au}$ ,  $^{nat}\text{Ti}$ ,  $^{27}\text{Al}$ , and  $^9\text{Be}$  at  $E = 8\text{-}9$  MeV,” R. J. Smith, J. J. Kolata, K. Lamkin, A. Morsad, K. Ashktorab, F. D. Becchetti, J. A. Brown, J. W. Jänecke, W. Z. Liu, and D. A. Roberts. Physical Review **C43**, 761.

“Production and Use of  $^6\text{He}$ ,  $^7\text{Be}$ ,  $^8\text{Li}$ ,  $^{12}\text{B}$  and Metastable Nuclear Beams,” F. D. Becchetti, J. Bajema, J. A. Brown, F. Brunner, H. Griffin, J. W. Jänecke, T. W. O’Donnell, R. S. Raymond, D. A. Roberts, R. S. Tickle, R. M. Ronningen, H. Laumer, N. Orr, A. Zeller, and R. E. Warner. Proceedings of 11th International Conference on the Applications of Accelerators (Denton, TX 1990). Nuclear Instruments and Methods **B56/57**, 554.

“Elastic and Inelastic Scattering of  $^8\text{Li}$  from  $^{12}\text{C}$ ,” R. J. Smith, J. J. Kolata, K. Lamkin, A. Morsad, F. D. Becchetti, J. A. Brown, J. W. Jänecke, W. Z. Liu, D. A. Roberts, and R. E. Warner. Physical Review **C43**, 2346.

## 1990

“Production and Use of Radioactive  $^7\text{Be}$  Beams,” R. J. Smith, J. J. Kolata, K. Lamkin, A. Morsad, K. Ashktorab, F. D. Becchetti, J. A. Brown, J. W. Jänecke, W. Z. Liu, and D. A. Roberts. Nuclear Instruments and Methods **A294**, 26.

“Production of an Isomeric, Excited Radioactive Nuclear Beam,” F. D. Becchetti, K. Ashktorab, J. A. Brown, J. W. Jänecke, D. A. Roberts, J. van Klinken, W. Z. Liu, J. J. Kolata, K. Lamkin, R. J. Smith, R. E. Warner. Physical Review **C42**, R801.

## Conference Proceedings

### 1998

“Proton Scattering on  $^{40}\text{S}$ ” F. Maréchal, T. Suomijävi, Y. Blumenfeld, A. Azhari, D. Bazin, J. A. Brown, P. D. Cottle, M. Fauerbach, T. Glasmacher, S. E. Hirzebruch, J. K. Jewell, K. W. Kemper, P. F. Mantica, D. J. Morrissey, L. A. Riley, J. A. Scarpaci and M. Steiner, *ENAM 98 Exotic Nuclei and Masses*, Bellaire Michigan 1998

### 1994

“A Mass Separator using a Large Solenoid ‘Lens’ with Time-of-Flight and Position-Sensitive Detectors,” T. W. O’Donnell, E. Aldredge, F. D. Becchetti, J. A. Brown, P. Conlan, J. Jänecke, R. S. Raymond, D. A. Roberts, R. S. Tickle, H. C. Griffin, and R. Ronningen. *Syuuposium on Radiation Measurements and Applications (8th in a Series)*, May 16-19, 1994, Ann Arbor, MI

### 1993

“Radioactive Beam Quasi-Elastic Neutron Tunneling on  $^{58}\text{Ni}$  to High-Spin Levels:  $^{58}\text{Ni}(^8\text{Li}, ^7\text{Li})$ ,” F. D. Becchetti, J. F. Bajema, K. Ashktorab, J. A. Brown, J. W. Jänecke, D. A. Roberts, J. J. Kolata, K. Lamkin, R. J. Smith, and

R. E. Warner. *Third International Conference on Radioactive Nuclear Beams*. May 1993, East Lansing, Michigan

“Study of Nuclear Reactions Using  $\gamma$ -tagged Radioactive nuclear Beams,” J. A. Brown, F. D. Becchetti, J. Jänecke, D. A. Roberts, D. W. Litzenberg, T. W. O’Donnell, R. M. Ronningen, and R. E. Warner. *Third International Conference on Radioactive Nuclear Beams*. May 1993, East Lansing, Michigan

## 1992

“Installation and Initial In Beam Tests of a Large-Bore 7 Tesla Superconducting Solenoid Reaction Product Collector,” F. D. Becchetti, J. Bajema, J. A. Brown, H. Griffin, J. W. Jänecke, T. O’Donnell, R. A. Raymond, D. A. Roberts, R. S. Tickle, R. M. Ronningen, H. Laumer, N. Orr, A. Zeller, and R. E. Warner. *6th International Conference on Nuclei far from stability*. July 1992, Bernkastel-Kues Germany.

## 1991

“Positron Emission Tomography of Implanted Radioactive Analog Radiotherapy Beams,” D. W. Litzenberg, F. D. Becchetti, J. A. Brown, D. A. Roberts, J. Garaher, G. Hutchins, R. Smith, K. Lamkin, R. M. Ronningen, and A. Martin. *Second International Conference on Radioactive Nuclear Beams*, Louvain-la-Neuve, Belgium.

“Production and Scattering of High-Energy Short-Lived Isomeric Nuclear Beams,” J. A. Brown, F. D. Becchetti, D. A. Roberts, J. Jänecke, R. M. Ronningen, J. J. Kolata, R. Smith and R. E. Warner. *Second International Conference on Radioactive Nuclear Beams*, Louvain-la-Neuve, Belgium

“ $^2\text{H}$  Induced Reactions on  $^8\text{Li}$  and Primordial Nucleosynthesis,” M. A. Farrell, R. N. Boyd, J. D. Kalen, X. Gu, J. J. Kolata, K. Lamkin, R. Smith, R. Tighe, K. Ashktorab, F. D. Becchetti, J. A. Brown, D. Roberts, and T.-F. Wang. *Second International Conference on Radioactive Nuclear Beams*, Louvain-la-Neuve, Belgium.

“Study of Deuteron Induced Reactions on  $^8\text{Li}$  of Interest to Primordial Nucleosynthesis,” M. A. Farrell, R. N. Boyd, J. D. Kalen, X. Gu, J. J. Kolata, K. Lamkin, R. Smith, R. Tighe, K. Ashktorab, F. D. Becchetti, J. A. Brown, D. Roberts, and T.-F. Wang. *International Conference on Unstable Nuclei in Astrophysics*, Tokyo, Japan.

## 1990

“Production and Use of a Radioactive  $^7\text{Be}$  Beam,” J. J. Kolata, R. Smith, K. Lamkin, A. Morsad, F. D. Becchetti, J. A. Brown, J. W. Jänecke, W. Z. Liu, and D. A. Roberts. *First International Conference on Radioactive Nuclear Beams*, Berkeley, USA.

“RNB Coulomb Excitation:  $^8\text{Li} + \text{Au}$ ,” F. D. Becchetti, J. A. Brown, J. W. Jänecke, W. Z. Liu, D. A. Roberts, J. Kolata, R. Smith, K. Lamkin, A. Morsad, and R. E. Warner. *First International Conference on Radioactive Nuclear Beams*, Berkeley, USA.

“Elastic and Inelastic Scattering of  $^8\text{Li}$  and  $^6\text{He}$  Ions,” J. A. Brown, F. D. Becchetti, J. W. Jänecke, W. Z. Liu, D. A. Roberts, J. Kolata, R. Smith, A. Morsad, and R. E. Warner. *First International Conference on Radioactive Nuclear Beams*, Berkeley, USA.

“Systematics of 14 MeV  $^8\text{Li}$ -induced Single-Nucleon Transfer Reactions on Light Nuclei,” W. Z. Liu, F. D. Becchetti, J. W. Jänecke, J. A. Brown, D. A. Roberts, J. Kolata, R. Smith, A. Morsad, and R. E. Warner. *First International Conference on Radioactive Nuclear Beams*, Berkeley, USA.

“Design of A 7T Solenoid Magnetic Lens System for Radioactive Beam Production,  $10 \text{ MeV/u} < E/A < 50 \text{ MeV/u}$ ,” F. D. Becchetti, J. Brown, W. Z. Liu, and D. Roberts. *First International Conference on Radioactive Nuclear Beams*, Berkeley, USA.

## Book reviews

## 2006

“Seeing into the Quantum World” Computing in Science and Engineering (May/June 2006).

## **Contributed presentations**

**1995**

“Measurement of the  $^1\text{H}(^6\text{He}, ^6\text{Li})\text{n}$  Reaction at  $0^\circ$ ,” Spring meeting of the American Physical Society, Division of Nuclear Physics, Washington, DC, April 1995.

**1993**

“Study of Nuclear Reactions Using  $\gamma$ -tagged Radioactive Nuclear Beams,” Third International Conference on Radioactive Nuclear Beams., East Lansing, MI, May 1993.

**1991**

“Production and Scattering of a High-Energy Metastable  $^{18}\text{F}^m$  Nuclear Beam,” Fall meeting of the American Physical Society, Division of Nuclear Physics, East Lansing, MI, October 1991.

**1990**

“Production of an Isomeric, Excited Nuclear Beam,” Fall meeting of the American Physical Society, Division of Nuclear Physics, Champagne-Urbana, IL, October 1990.

“Inelastic Scattering of Short-Lived Radioactive Beams:  $^8\text{Li}$ ,” Fall meeting of the American Physical Society, Division of Nuclear Physics, Champagne-Urbana, IL, October 1990.

## **Invited Seminars and Colloquia**

“Tell me MoNA where has the magic gone?”, DePauw University, November 2009

“Assessment in IIP”. NSF, October 2009

“What’s so magic about these numbers?”, Indiana State University, April 2007

“Nuclear Structure Studies with the Modular Neutron Array”, Duke University, Triangle Universities Nuclear Structure Laboratory, March 2006

“Status of the Modular Neutron Array, new opportunities near the neutron dripline”, Ball State University, November 2004

“Production of secondary beams at the NSCL”, MoNA workshop, NSCL/MSU June 2004

“Exploring the neutron-dripline”, Earlham College, March 2003

“The MoNA project”, Austin College, March 2003

“Exploring the Neutron Dripline with MoNA”, Wabash College, March 2003

“Nuclear charge exchange with unstable nuclei”, Millikin University, April 1998

“New developments in nuclear physics using secondary nuclear beams,” Idaho State University, June 2, 1997.

“Secondary Nuclear Beams: new opportunities in nuclear physics,” Hendrix College, May 2, 1997.

“Secondary Nuclear Beams: Prospects in nuclear structure,” Allegheny College, May 1996.

“Secondary Nuclear Beams: new frontiers in nuclear physics,” Mesa State College, April 16, 1996.

“Elastic Scattering of a Metastable Nuclear Beam:  $^{18}\text{F}^m(\text{p},\text{p})$ ,” NSCL Nuclear Seminar, Michigan State University, April 20, 1993.

“Elastic Scattering of a Metastable Nuclear Beam:  $^{18}\text{F}^m(\text{p},\text{p})$ ” Nuclear Physics Lab., University of Washington, June 1, 1993

“Elastic Scattering of a Metastable Nuclear Beam:  $^{18}\text{F}^m(\text{p},\text{p})$ ” Cyclotron Lab., Texas A&M University, June 9, 1993