

James Brown

Physics Department
Wabash College
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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.)
- National Science Foundation grant with S. Feller for \$599,000 (2013-17) to provide scholarships to undergraduate students pursuing chemistry or physics at Wabash College
- McLain-McTurnan-Arnold Excellence in Teaching Award (2012)
- Extensive committee service
- 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 Bechetti
- Measured elastic scattering of $^{18}\text{F}^m$ using both the A1200

9/88-1/90	fragment separator and the UM-Solenoid at MSU-NSCL • <u>Head Teaching Assistant</u> for elementary labs.	
9/87-8/88	Radiophysics Inc. • Investigated Jovian Radio Emissions using data from Voyagers I and II	Boulder, CO
6/87-9/87	Jet Propulsion Laboratory • Technical Staff, developed debugging tools for parallel computing system	Pasadena, CA

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

1. “Low-lying neutron unbound states in ^{12}Be ”, Smith, J.K., *et al.* Physical Review C, 024309, (2014)
2. “Observation of a low-lying neutron-unbound state in ^{19}C ”, M. Thoennessen, *et al.* Nuclear Physics A 912 (2013) 1–6
3. “Search for ^{21}C and constraints on ^{22}C ”, S. Mosby, *et al.* Nuclear Physics A 909 (2013) 69–78
4. “Near-barrier fusion and total reaction of a proton-rich projectile: $^3\text{He}+^{58}\text{Ni}$,” E. F. Aguilera, *et al.* Physical Review C 87, 014613 (2013)
5. “Exploring the Low-Z Shore of the Island of Inversion at $N = 19$ ”, G. Christian, *et al.* Phys. Rev. Lett. 108, 032501 (2012)
6. “Search for the ^{15}Be Ground State”, A. Spyrou, *et al.*, Phys. Rev. C 84, 044309 (2011)
7. “Neutron-unbound states in $^{25,26}\text{F}$ ” N. Frank, *et al.*, Physical Review C 84, 03702 (2011)
8. “Near Barrier Fusion of $^8\text{B}+^{58}\text{Ni}$ Proton-Halo System” E. F. Aguilera, *et al.*, Physical Review Letters 107, 092701 (2011)
9. “Observation of a two-neutron cascade from a resonance in ^{24}O ”, C. R. Hoffman, *et al.*, Physical Review C 83, 031303 (2011)
10. “Neutron knockout of ^{12}Be populating unbound states in ^{11}Be ” W. A. Peters, *et al.*, Physical Review C 83, 031303 (2011)
11. “First evidence for a virtual ^{18}B ground state”, A. Spyrou, *et al.*, Physics Letters B 683, 129 (2010)
12. “First observation of excited states in ^{12}Li ” C. C. Hall, *et al.*, Physical Review C 81, 021302 (2010)
13. “Evidence for a doubly magic ^{24}O ”, C. R. Hoffman, *et al.*, Physics Letter B 672, 17 (2009)
14. “Disappearance of the $N=14$ shell”, M. J. Strongman, *et al.*, Physical Review C 80, 021302 (2009)
15. “Production of nuclei in neutron unbound states via primary fragmentation of ^{48}Ca ”, G. Christian, *et al.*, Nuclear Physics A801, 101 (2008)
16. “Ground state energy and width of ^7He from ^8Li proton knockout”, D. H. Denby, *et al.*, Physical Review C 78, 044303 (2008)
17. “Neutron decay spectroscopy of neutron-rich oxygen isotopes”, N. Frank, Nuclear Physics A813, 199 (2008)
18. “Determination of the $N = 16$ Shell Closure at the Oxygen Drip Line” C. R. Hoffman, *et al.*, Physical Review Letters 100, 152502 (2008)
19. “Selective Population and Neutron Decay of an Excited State of ^{23}O ” A. Schiller, *et al.*, Physical Review Letters 99, 112501 (2007)
20. “Breakup of ^6He incident on ^{209}Bi near the Coulomb barrier” J. J. Kolata *et al.*, Physical Review C 75, 031302 (2007)
21. “Nuclear reactions with radioactive, isomer beams: Coulomb excitation of $^{18}\text{F}_{g.s.}$ and its $J^\pi = 5^+$ isomer $^{18}\text{F}^m$ using a large position-sensitive NaI array” J. A. Zimmerman, *et al.*, Nuclear Instruments and Methods Phys. Res. A579, 476 (2007)
22. “ ^7Be -induced α -transfer reaction on ^{12}C ”, H. Amro, *et al.*, Eur. Phys. J. Special Topics 150, 1 (2007)
23. “Measurement of the Gamow-Teller Strength Distribution in ^{58}Co via the $^{58}\text{Ni}(t,^3\text{He})$ reaction at 115 MeV/nucleon” A. L. Cole, *et al.*, Physical Review C 74, 034333 (2006)
24. “Reaction and proton-removal cross sections of ^6Li , ^7Be , ^{10}B , $^{9,10,11}\text{C}$, ^{12}N , $^{13,15}\text{O}$ and ^{17}Ne on Si at 15 to 53 MeV/nucleon”, R. E. Warner, *et al.*, Physical Review C 74, 014605 (2006)
25. “The $(t, ^3\text{He})$ and $(^3\text{He}, t)$ reactions as probes of Gamow-Teller strength” R. G. T. Zegers, *et al.*, Physical Review C 74, 024309 (2006)

26. "Fabrication of a modular neutron array: A collaborative model to undergraduate research", R. H. Howes, *et al.*, American Journal of Physics (2005)
27. "Weak interaction strengths for supernovae calculations via the (t, ^3He) reaction on medium-heavy nuclei", R. G. T. Zegers, *et al.*, Nuclear Physics A758, 67c (2005)
28. "Construction of a modular large-area neutron detector for the NSCL" T. Baumann *et al.*, Nucl. Instr. and Meth. A543, 517-527 (2005)
29. "Proton removal from ^8B , ^9C , and ^{12}C on Si at 20-70 MeV/nucleon", R. E. Warner, *et al.*, Physical Review C 69, 024612 (2004)
30. "Gamma-ray spectroscopy with a low-energy ^6He radioactive ion beam" S. M. Vincent, *et al.*, Nucl. Instrum. Methods Phys. Res. A491, 426 (2002)
31. "Energy Dependence of the Total Reaction Cross Section of Isomeric $^{18}\text{F}^m$ on Silicon below 400 MeV" D. A. Roberts, *et al.*, Physical Review C65, 044605 (2002)
32. "Elastic Scattering and Transfer in the $^8\text{Li} + ^{209}\text{Pb}$ System Near the Coulomb Barrier" J. J. Kolata, *et al.*, Physical Review C65, 054616 (2002)
33. "Total Reaction and Neutron-Removal Cross Sections of (30-60)A MeV Be Isotopes on Si and Pb" R. E. Warner, *et al.*, Physical Review C64, 044611 (2001)
34. "Production of A=6, 7 Nuclides in the $\alpha+\alpha$ Reaction and Cosmic Ray Nucleosynthesis" D. J. Mercer, *et al.*, Physical Review C63, 065805 (2001)
35. "Total Reaction and Neutron-Removal Cross Sections of (30-60)A MeV He and Li Isotopes on Pb" R. E. Warner, *et al.*, Physical Review C62, 024608 (2000)
36. "Isovector Giant Resonances in ^6He , ^{12}B , ^{90}Y , ^{120}In , and ^{208}Tl Observed in the (^7Li , ^7Be) Charge-Exchange Reaction" T. Annakkage, *et al.*, Nucl. Phys. A648, 3 (1999)
37. "Proton Scattering by Short Lived Sulfur Isotopes" F. Marechal, *et al.*, Physical Review C60, 034615 (1999)
38. "Proton Scattering from the Unstable Neutron-Rich Nucleus ^{43}Ar " F. Marechal, *et al.*, Physical Review C60, 064623 (1999)
39. "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, *et al.*, Nucl. Instrum. Methods Phys. Res. A422, 513 (1999)
40. "Population of ^{10}Li by Fragmentation" M. Thoennessen, *et al.*, Physical Review C59, 111 (1999)
41. "Proton Decay of States in ^{11}N " A. Azhari, *et al.*, Physical Review C59, 111 (1999)
42. "Probing the Halo Structure of $^{19,17,15}\text{C}$ and ^{14}B " D. Bazin, *et al.*, Physical Review C57, 2156 (1998)
43. Breakup of ^{11}Be : Prompt or delayed? J. E. Bush, P. A. Hausladen, *et al.*, Physical Review Letters 81, 61 (1998)
44. "Gamow-Teller Strengths from (t, ^3He) Charge-Exchange Reactions on Light Nuclei" I. Daito, *et al.*, Physics Letters 418B, 27 (1998)
45. "Reaction Cross Sections in Si of Light Proton-Halo Candidates ^{12}N and ^{17}Ne " R. E. Warner, *et al.*, Nucl. Phys. A635, 292 (1998)
46. "(t, ^3He) Reaction; New tool for studying spin-isospin excitations in neutron rich nuclei," I. Diato, *et al.*, Nuclear Instruments and Methods A397, 465-471
47. "Elastic and Inelastic Scattering of Protons on ^{38}S in Inverse Kinematics," T. Suomijävi, *et al.*, Nuclear Physics A616 295c-302c
48. "Proton Scattering on the Unstable ^{38}S Nucleus: Isovector contribution to the 2_1^+ State," J. H. Kelley, *et al.*, Physical Review C56, R1206
49. "Isospin Dependence of Collective Transverse Flow in Nuclear Collisions," R. Pak, *et al.*, Physical Review Letters 78, 1022
50. "Isospin Dependence of the Balance Energy," R. Pak, Bao-An Li, W. Benenson, *et al.*, Physical Review Letters 78, 1026
51. "Measurement of the $^1\text{H}(^6\text{He}, ^6\text{Li})n$ reaction at 0° ," J. A. Brown, *et al.*, Physical Review C54, R2105
52. "New Region of Deformation: The neutron-rich sulfur isotopes," H. Scheit, *et al.*, Physical Review Letters 77, 3967
53. "Total Reaction and 2n-Removal Cross Sections of 20-60A MeV $^{4,6,8}\text{He}$, $^{6,9,11}\text{Li}$, and ^{10}Be on Si," R. E. Warner *et al.*, Physical Review C54, 1700
54. "Structure of the Neutron-Halo Nucleus ^6He ," J. Janecke, T *et al.*, Physical Review C54, 1070
55. "Study of the Breakup Reaction $^8\text{B} \rightarrow ^7\text{Be} + p$: Absorption effects and E2 strength," J. H. Kelley, *et al.*, Physical Review Letters 77, 5020
56. "Isovector Giant Resonances in ^6He , ^{12}B , ^{90}Y , ^{120}In and ^{208}Tl ," J. Janecke, *et al.*, Nuclear Physics A599, 191c-196c
57. "Upper limit on the lifetime of ^{16}B ," R. A. Kryger, *et al.*, Physical Review C53, 1971-1973

58. "First Study of Heavy-ion Mirror Charge Exchange," M. Steiner, *et al.*, Physical Review Letters 76, 26-31, 3042 (E)
59. "Proton Scattering from an Excited Nucleus ($^{18}\text{F}^m$, $J^\pi=5^+$, $E_x=1.1$ MeV) Using a γ -Ray-Tagged Secondary Isomeric Nuclear Beam," J. A. Brown, *et al.*, Physical Review C51, 1312-1319
60. "The $^8\text{Li}(\alpha,n)^{11}\text{B}$ reaction and primordial nucleosynthesis," X. Gu, *et al.*, Physics Letters B343, 31-35
61. "The one-neutron halo of ^{19}C ," D. Bazin, *et al.*, Physical Review Letters 74, 3569-72
62. "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, *et al.*, Nuclear Physics A588, 247c-252c
63. "Evidence for a proton halo in ^8B : Enhanced total reaction cross sections at 20 to 60 MeV/nucleon," R. E. Warner, *et al.*, Physical Review C52, R1166-70
64. "Cross Sections and Reaction Rates of $d + ^8\text{Li}$ Reactions Involved in Big Bang Nucleosynthesis," M. J. Balbes, *et al.*, Nuclear Physics A584, 315
65. "Installation and In-Beam Tests of Large-Bore 7 Tesla Superconducting Solenoid Reaction-Product Collector," F. D. Becchetti, *et al.*, Nuclear Instruments and Methods B79, 326-329.
66. "Cross Section for the Primordial Reaction $^8\text{Li}(p,n)^8\text{Be}_{(g.s.)}$ at $E_{c.m.}=1.5$ MeV," D. D. Caussyn, *et al.*, Physical Review C47, 387-391.
67. "Systematics of ^8Li Induced Radioactive Beam Reactions: $E=13-20$ MeV," F. D. Becchetti, *et al.*, Physical Review C48, 308
68. "Elastic Scattering of 318 MeV ^7Li from ^{12}C and ^{28}Si : Unique phenomenological and folding model potentials," A. Nadasen, *et al.*, Physical Review C47, 674-681.
69. " ^2H Induced Reactions on ^8Li and Primordial Nucleosynthesis," M. J. Balbes, *et al.*, Physical Review Letters 71, 3931-3934
70. "Light Particle Emission at 0° 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.
71. "Reaction Rates for $^8\text{Li}(p,\alpha)$ and $^8\text{Li}(p,\alpha n)$ and Their Effect on Primordial Nucleosynthesis," F. D. Becchetti, *et al.*, Nuclear Physics A550, 507-516
72. "Coulomb Excitation of ^8Li ," J. A. Brown, *et al.*, Physical Review Letters 66, 2452.
73. "Scattering of ^6He from ^{197}Au , ^{nat}Ti , ^{27}Al , and ^9Be at $E = 8-9$ MeV," R. J. Smith, *et al.*, Physical Review C43, 761.
74. "Production and Use of ^6He , ^7Be , ^8Li , ^{12}B and Metastable Nuclear Beams," F. D. Becchetti, *et al.*, Proceedings of 11th International Conference on the Applications of Accelerators (Denton, TX 1990). Nuclear Instruments and Methods B56/57, 554.
75. "Elastic and Inelastic Scattering of ^8Li from ^{12}C ," R. J. Smith, *et al.*, Physical Review C43, 2346.
76. "Production and Use of Radioactive ^7Be Beams," R. J. Smith, *et al.*, Nuclear Instruments and Methods A294, 26.
77. "Production of an Isomeric, Excited Radioactive Nuclear Beam," F. D. Becchetti, *et al.*, Physical Review C42, R801.

Selected Invited Seminars and Colloquia

1. "MoNA needs from HRS" Michigan State University, HRS workshop July 2014
2. "Recent results and prospects for Neutron Arrays – MoNA – LISA", Argonne Nat. Lab., Low Energy Community, Aug. 17, 2012
3. "Status and results from the MoNA Collaboration", Michigan State University – Joint Working Group Aug. 19, 2011
4. "Tell me MoNA where has the magic gone?", DePauw University, November 2009
5. "Assessment in IIP". NSF, October 2009
6. "What's so magic about these numbers?", Indiana State University, April 2007
7. "Nuclear Structure Studies with the Modular Neutron Array", Duke University, Triangle Universities Nuclear Structure Laboratory, March 2006
8. "Status of the Modular Neutron Array, new opportunities near the neutron dripline", Ball State University, November 2004
9. "Production of secondary beams at the NSCL", MoNA workshop, NSCL/MSU June 2004