Juan José Manfredi, Jr. **Curriculum vitae**

CONTACT INFORMATION

Postdoctoral Scholar
Department of Nuclear Engineering
University of California, Berkeley
2521 Hearst Ave
Berkeley, CA 94720

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EDUCATION

Michigan State University, East Lansing, MI
Ph.D., Physics *August 2012 - August 2018*
Graduate Certificate in Computational Modeling *August 2014 - May 2017*
M.S., Physics *August 2012 - May 2015*
Thesis Topic: Spectroscopic Factors from High-Energy Transfer Reactions
Advisor: Betty Tsang

Washington University in St. Louis, St. Louis, MO
B.A., Mathematics, Physics *August 2008 - May 2012*
Summa cum laude, Honors in Physics, and Distinction in Mathematics
Thesis Topic: α-decay of Excited States in ^{12}C
Advisor: Lee Sobotka

RESEARCH POSITIONS

Postdoctoral Scholar *August 2018 - present*
88-Inch Cyclotron, Lawrence Berkeley National Laboratory Berkeley, CA
Sandia National Laboratories Livermore, CA
Mentor: Bethany L. Goldblum

Research Assistant *August 2012 - July 2018*
National Superconducting Cyclotron Laboratory (NSCL) East Lansing, MI
Advisor: Betty Tsang

Stewardship Science Graduate Fellow *May 2014 - August 2014*
Lawrence Livermore National Laboratory Livermore, CA
Advisors: Rob Hoffman (PLS) and Peter Anninos (WCI)

Undergraduate Assistant *August 2009 - May 2012*
Washington University in St. Louis St. Louis, MO
Advisor: Lee Sobotka

ACADEMIC HONORS

- MSU Dissertation Completion Fellowship *August 2017 - December 2017*
- NNSA Stewardship Science Graduate Fellowship *September 2013 - August 2017*
- NSCL Fellowship *August 2012 - September 2017*
- College of Natural Science Recruiting Fellowship *August 2012 - July 2013*
- MARC U-STAR Fellowship *January 2011 - May 2012*
- Washington University Eliot Scholarship *August 2008 - May 2012*
- Washington University Robert Levis Family Scholarship *August 2008 - May 2012*

PEER-REVIEWED PUBLICATIONS

[1] T. B. Webb, R. J. Charity, J. M. Elson, D. E. M. Hoff, C. D. Pruitt, L. G. Sobotka, K. W. Brown, J. Barney, G. Cerizza, J. Estee, G. Jhang, W. G. Lynch, J. Manfredi, P. Morfouace, C. Santamaria, S. Sweany, M. B. Tsang, T. Tsang, S. M. Wang, Y. Zhang, K. Zhu, S. A. Kuvin, D. McNeel, J. Smith, A. H. Wuosmaa, and Z. Chajecki, "Particle decays of levels in ^{11,12}N and ^{12}O investigated with the invariant-mass method," *Phys. Rev. C*, vol. 100, p. 024306, Aug 2019

[2] D. Dell'Aquila, S. Sweany, K. Brown, Z. Chajecki, W. Lynch, F. Teh, C.-Y. Tsang, M. Tsang, K. Zhu, C. Anderson, A. Anthony, S. Barlini, J. Barney, A. Camaiani,

G. Jhang, J. Crosby, J. Estee, M. Ghazali, F. Guan, O. Khanal, S. Kodali, I. Lombardo, J. Manfredi, L. Morelli, P. Morfouace, C. Niu, and G. Verde, "Non-linearity effects on the light-output calibration of light charged particles in csi(tl) scintillator crystals," *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, vol. 929, pp. 162 – 172, 2019

[3] R. J. Charity, K. W. Brown, J. Elson, W. Reviol, L. G. Sobotka, W. W. Buhro, Z. Chajecki, W. G. Lynch, J. Manfredi, R. Shane, R. H. Showalter, M. B. Tsang, D. Weisshaar, J. Winkelbauer, S. Bedoor, D. G. McNeel, and A. H. Wuosmaa, "Invariant-mass spectroscopy of ^{18}Ne,^{16} O, and ^{10}C excited states formed in neutron-transfer reactions," *Phys. Rev. C*, vol. 99, p. 044304, Apr 2019

[4] T. B. Webb, S. M. Wang, K. W. Brown, R. J. Charity, J. M. Elson, J. Barney, G. Cerizza, Z. Chajecki, J. Estee, D. E. M. Hoff, S. A. Kuvin, W. G. Lynch, J. Manfredi, D. McNeel, P. Morfouace, W. Nazarewicz, C. D. Pruitt, C. Santamaria, J. Smith, L. G. Sobotka, S. Sweany, C. Y. Tsang, M. B. Tsang, A. H. Wuosmaa, Y. Zhang, and K. Zhu, "First observation of unbound ^{11}O, the mirror of the halo nucleus ^{11}Li," *Phys. Rev. Lett.*, vol. 122, p. 122501, Mar 2019

[5] R. J. Charity, K. W. Brown, J. Okołowicz, M. Płoszajczak, J. M. Elson, W. Reviol, L. G. Sobotka, W. W. Buhro, Z. Chajecki, W. G. Lynch, J. Manfredi, R. Shane, R. H. Showalter, M. B. Tsang, D. Weisshaar, J. R. Winkelbauer, S. Bedoor, and A. H. Wuosmaa, "Spin alignment following inelastic scattering of ^{17}Ne, lifetime of ^{16}F, and its constraint on the continuum coupling strength," *Phys. Rev. C*, vol. 97, p. 054318, May 2018

[6] J. Manfredi, J. Lee, W. Lynch, C. Niu, M. Tsang, C. Anderson, J. Barney, K. Brown, Z. Chajecki, K. Chan, G. Chen, J. Estee, Z. Li, C. Pruitt, A. Rogers, A. Sanetullaev, H. Setiawan, R. Showalter, C. Tsang, J. Winkelbauer, Z. Xiao, and Z. Xu, "On determining dead layer and detector thicknesses for a position-sensitive silicon detector," *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, vol. 888, pp. 177 – 183, 2018

[7] J. Bradt, Y. Ayyad, D. Bazin, W. Mittig, T. Ahn, S. B. Novo, B. Brown, L. Carpenter, M. Cortesi, M. Kuchera, W. Lynch, S. Rost, N. Watwood, J. Yurkon, J. Barney, U. Datta, J. Estee, A. Gillibert, J. Manfredi, P. Morfouace, D. Pérez-Loureiro, E. Pollacco, J. Sammut, and S. Sweany, "Study of spectroscopic factors at n=29 using isobaric analogue resonances in inverse kinematics," *Physics Letters B*, vol. 778, pp. 155 – 160, 2018

[8] K. W. Brown, R. J. Charity, J. M. Elson, W. Reviol, L. G. Sobotka, W. W. Buhro, Z. Chajecki, W. G. Lynch, J. Manfredi, R. Shane, R. H. Showalter, M. B. Tsang, D. Weisshaar, J. R. Winkelbauer, S. Bedoor, and A. H. Wuosmaa, "Proton-decaying states in light nuclei and the first observation of ^{17}Na," *Phys. Rev. C*, vol. 95, p. 044326, Apr 2017

[9] A. H. Wuosmaa, S. Bedoor, K. W. Brown, W. W. Buhro, Z. Chajecki, R. J. Charity, W. G. Lynch, J. Manfredi, S. T. Marley, D. G. McNeel, A. S. Newton, D. V. Shetty, R. H. Showalter, L. G. Sobotka, M. B. Tsang, J. R. Winkelbauer, and R. B. Wiringa, "Ground-state properties of ^{5}H from the ^{6}He(d,^{3} He)^{5}H reaction," *Phys. Rev. C*, vol. 95, p. 014310, Jan 2017

[10] K. W. Brown, R. J. Charity, L. G. Sobotka, L. V. Grigorenko, T. A. Golubkova, S. Bedoor, W. W. Buhro, Z. Chajecki, J. M. Elson, W. G. Lynch, J. Manfredi,

D. G. McNeel, W. Reviol, R. Shane, R. H. Showalter, M. B. Tsang, J. R. Winkelbauer, and A. H. Wuosmaa, "Interplay between sequential and prompt two-proton decay from the first excited state of ^{16}Ne," *Phys. Rev. C*, vol. 92, p. 034329, Sep 2015

[11] D. Sarantites, W. Reviol, J. Elson, J. Kinnison, C. Izzo, J. Manfredi, J. Liu, H. Jung, and J. Goerres, "Phoswich wall: A charged-particle detector array for inverse-kinematic reactions with the gretina/greta γ-ray arrays," *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, vol. 790, pp. 42 – 56, 2015

[12] R. J. Charity, J. M. Elson, J. Manfredi, R. Shane, L. G. Sobotka, Z. Chajecki, D. Coupland, H. Iwasaki, M. Kilburn, J. Lee, W. G. Lynch, A. Sanetullaev, M. B. Tsang, J. Winkelbauer, M. Youngs, S. T. Marley, D. V. Shetty, and A. H. Wuosmaa, "Spin alignment of excited projectiles due to target spin-flip interactions," *Phys. Rev. C*, vol. 91, p. 024610, Feb 2015

[13] K. W. Brown, R. J. Charity, L. G. Sobotka, Z. Chajecki, L. V. Grigorenko, I. A. Egorova, Y. L. Parfenova, M. V. Zhukov, S. Bedoor, W. W. Buhro, J. M. Elson, W. G. Lynch, J. Manfredi, D. G. McNeel, W. Reviol, R. Shane, R. H. Showalter, M. B. Tsang, J. R. Winkelbauer, and A. H. Wuosmaa, "Observation of long-range three-body coulomb effects in the decay of ^{16}Ne," *Phys. Rev. Lett.*, vol. 113, p. 232501, Dec 2014

[14] K. W. Brown, W. W. Buhro, R. J. Charity, J. M. Elson, W. Reviol, L. G. Sobotka, Z. Chajecki, W. G. Lynch, J. Manfredi, R. Shane, R. H. Showalter, M. B. Tsang, D. Weisshaar, J. R. Winkelbauer, S. Bedoor, and A. H. Wuosmaa, "Two-proton decay from the isobaric analog state in ^{8}B," *Phys. Rev. C*, vol. 90, p. 027304, Aug 2014

[15] L. G. Sobotka, W. W. Buhro, R. J. Charity, J. M. Elson, M. F. Jager, J. Manfredi, M. H. Mahzoon, A. M. Mukhamedzhanov, V. Eremenko, M. McCleskey, R. G. Pizzone, B. T. Roeder, A. Spiridon, E. Simmons, L. Trache, M. Kurokawa, and P. Navrátil, "Proton decay of excited states in ^{12}n and ^{13}o and the astrophysical ^{11}c$(p,\gamma)^{12}$n reaction rate," *Phys. Rev. C*, vol. 87, p. 054329, May 2013

[16] I. A. Egorova, R. J. Charity, L. V. Grigorenko, Z. Chajecki, D. Coupland, J. M. Elson, T. K. Ghosh, M. E. Howard, H. Iwasaki, M. Kilburn, J. Lee, W. G. Lynch, J. Manfredi, S. T. Marley, A. Sanetullaev, R. Shane, D. V. Shetty, L. G. Sobotka, M. B. Tsang, J. Winkelbauer, A. H. Wuosmaa, M. Youngs, and M. V. Zhukov, "Democratic decay of ^{6}Be exposed by correlations," *Phys. Rev. Lett.*, vol. 109, p. 202502, Nov 2012

[17] M. F. Jager, R. J. Charity, J. M. Elson, J. Manfredi, M. H. Mahzoon, L. G. Sobotka, M. McCleskey, R. G. Pizzone, B. T. Roeder, A. Spiridon, E. Simmons, L. Trache, and M. Kurokawa, "Two-proton decay of ^{12}o and its isobaric analog state in ^{12}n," *Phys. Rev. C*, vol. 86, p. 011304, Jul 2012

[18] J. Manfredi, R. J. Charity, K. Mercurio, R. Shane, L. G. Sobotka, A. H. Wuosmaa, A. Banu, L. Trache, and R. E. Tribble, "α decay of the excited states in ^{12}c at 7.65 and 9.64 mev," *Phys. Rev. C*, vol. 85, p. 037603, Mar 2012

[19] R. J. Charity, J. M. Elson, J. Manfredi, R. Shane, L. G. Sobotka, Z. Chajecki, D. Coupland, H. Iwasaki, M. Kilburn, J. Lee, W. G. Lynch, A. Sanetullaev, M. B. Tsang, J. Winkelbauer, M. Youngs, S. T. Marley, D. V. Shetty, A. H. Wuosmaa, T. K. Ghosh, and M. E. Howard, "Isobaric multiplet mass equation for $a = 7$ and 8," *Phys. Rev. C*, vol. 84, p. 051308, Nov 2011

[20] R. J. Charity, J. M. Elson, J. Manfredi, R. Shane, L. G. Sobotka, B. A. Brown, Z. Chajecki, D. Coupland, H. Iwasaki, M. Kilburn, J. Lee, W. G. Lynch, A. Sanetullaev, M. B. Tsang, J. Winkelbauer, M. Youngs, S. T. Marley, D. V. Shetty, A. H. Wuosmaa, T. K. Ghosh, and M. E. Howard, "Investigations of three-, four-, and five-particle decay channels of levels in light nuclei created using a ^{9}C beam," *Phys. Rev. C*, vol. 84, p. 014320, Jul 2011

[21] R. J. Charity, J. M. Elson, J. Manfredi, R. Shane, L. G. Sobotka, Z. Chajecki, D. Coupland, H. Iwasaki, M. Kilburn, J. Lee, W. G. Lynch, A. Sanetullaev, M. B. Tsang, J. Winkelbauer, M. Youngs, S. T. Marley, D. V. Shetty, A. H. Wuosmaa, T. K. Ghosh, and M. E. Howard, "$2p$-$2p$ decay of ^{8}**C** and isospin-allowed $2p$ decay of the isobaric-analog state in ^{8}**B**," *Phys. Rev. C*, vol. 82, p. 041304, Oct 2010

Other Publications

[1] J. Manfredi. "Starstruck," Stewardship Science Magazine, 2014.

Invited Talks

- *An Optically Segmented Single-Volume Scatter Camera for Compact, High-efficiency Neutron Imaging*
  University Program Review
  Raleigh, NC — *June 5, 2019*

- *Organic Scintillator Light Yield at Berkeley/LBNL*
  Theia Workshop, Fermilab
  Batavia, IL — *December 13, 2018*

- *Extracting Spectroscopic Factors from High-Energy Transfer Reactions*
  Bay Area Neutron Group Meeting
  Berkeley, CA — *January 26, 2018*

- *Extracting Spectroscopic Factors from High-Energy Transfer Reactions*
  Nuclear Data Seminar, Los Alamos National Laboratory
  Los Alamos, NM — *December 11, 2017*

- *Transfer Reactions on Argon Isotopes*
  SSGF Annual Review Meeting
  Santa Fe, NM — *June 22, 2017*

Contributed Talks

- *An Optically Segmented Single-Volume Scatter Camera for Compact, High-efficiency Neutron Imaging*
  International Conference on the Application of Nuclear Techniques
  Rethymno, Crete, Greece — *June 11, 2019*

- *Asymmetry Dependence of Spectroscopic Factors: A Study of Transfer Reactions on Argon Isotopes at 70 MeV/u*
  NSCL PhD Thesis Defense
  East Lansing, MI — *July 16, 2018*

- *Extracting Spectroscopic Factors of Argon Isotopes from Transfer Reactions*
  APS Division of Nuclear Physics Fall Meeting 2017
  Pittsburgh, PA — *October 26, 2017*

- *Extracting Spectroscopic Factors of Argon Isotopes from Transfer Reactions*
  Huzhou-CUSTIPEN Workshop on Spectroscopy and Reactions of Exotic Nuclei
  Huzhou, China — *July 5, 2017*

- *GPU-Accelerated Lanczos Diagonalization*
  APS Ohio-Region Meeting
  Ypsilanti, MI *May 6, 2017*

- *Extracting Spectroscopic Factors of Argon Isotopes from Transfer Reactions*
  APS April Meeting 2017
  Washington DC *January 31, 2017*

- *Alpha Decay of Excited States in ^{12}C*
  Nuclear Lunch, Washington University in St. Louis
  St. Louis, MO *February 3, 2012*

Professional Service

- Referee
  - ⋆ Nuclear Instrumentation and Methods
  - ⋆ International Journal of Modern Physics
- Tour Guide
  National Superconducting Cyclotron Laboratory (NSCL) *August 2013 - July 2018*
  - ⋆ Conducted over 30 tours of the lab to audiences with a wide range of technical expertise
- Science and Leadership at Michigan State
  Michigan State University *August 2016 - August 2017*
  - ⋆ Organized summer science camp for middle school students from Lansing Public Schools
- President
  NSCL Graduate Student Organization *August 2015 - August 2016*
  - ⋆ Represented graduate student community to lab leadership
  - ⋆ Organized weekly graduate student seminars
- Outreach Coordinator
  Women and Minorities in the Physical Sciences *August 2015 - May 2016*
  - ⋆ Planned and conducted science education events for general public
- Volunteer Leader
  Physics of Atomic Nuclei *August 2013 - August 2015*
  - ⋆ Instructed high school teachers from around the country about basic nuclear physics

Professional Memberships

- American Physical Society (2011 - present)
- Joint Institute for Nuclear Astrophysics (2012 - 2018)

Posters

- *Scintillator Characterization of Fast Plastics*
  [1] University Program Review
  Raleigh, NC *June 2-4, 2019*
- *Extracting Spectroscopic Factors Using Transfer Reactions*
  [2] University and Industry Technical Interchange
  Ann Arbor, MI *June 2-4, 2015*

  [3] Stewardship Science Graduate Fellowship Annual Program Review
  Washington D.C. *June 29 - July 2, 2015*

[4] Stewardship Science Graduate Fellowship Annual Program Review
Las Vegas, NV *June 27 - June 30, 2016*

- *Investigation of Neutron Star Mass using the Nuclear Equation of State*
  [5] Livermore PLS Division Summer Poster Session
  Livermore, CA *August 2014*
- *The High Resolution Array (HiRA): A Large Solid Angle Silicon Array for Rare Isotope Beam Experiments*
  [6] Stewardship Science Academic Program Symposium
  Washington D.C. *February 19-20, 2014*

  [7] DOE NNSA SSGF Annual Program Review
  Berkeley, CA *June 23-25, 2014*
- *α-decay of excited states in ^{12}C*
  [8] Fall Meeting of the APS Division of Nuclear Physics
  Newport Beach, CA *October 24-27, 2012*

  [9] Nuclear Structure 2012
  Lemont, IL *August 13-17, 2012*

  [10] St. Louis Area Undergraduate Research Symposium
  St. Louis, MO *April 21, 2012*

  [11] Washington University Undergraduate Research Symposium
  St. Louis, MO *April 28, 2012*
- *Mass of ^{8}C and its five body decay through ^{6}Be*
  [12] Fall Meeting of the APS Division of Nuclear Physics
  East Lansing, MI *October 26-29, 2011*

References

- Available upon request.