Adam L. Fritsch

Contact Information

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Education

PhD, Physics, Michigan State University, East Lansing, MI — August 2014
Area of Specialization: Experimental Nuclear Physics, advised by Wolfgang Mittig
Dissertation: "The Search for Cluster Structure in ^{14}C with the Prototype AT-TPC"
Secondary Area of Emphasis: Physics Education Research

MS, Physics, Michigan State University, East Lansing, MI — December 2011

AB, Physics, Wabash College, Crawfordsville, IN — May 2009
ΦBK, *Magna Cum Laude*, Minor in Mathematics

Academic Positions

Assistant Professor of Physics — Fall 2015 to Present
Gonzaga University, Spokane, WA

FRIB Visiting Scholar for Experimental Science — Summer 2017
Facility for Rare Isotope Beams (FRIB), East Lansing, MI

Visiting Research Scientist — Summer 2015
National Superconducting Cyclotron Laboratory (NSCL), East Lansing, MI

Visiting Assistant Professor of Physics — Fall 2014 to Spring 2015
The College of Wooster, Wooster, OH

Graduate Research & Teaching Assistant — Summer 2009 to Summer 2014
Michigan State University, NSCL, East Lansing, MI

Grants, Fellowships, Honors, & Awards

FRIB Visiting Scholar for Experimental Science Award — Summer 2017
FRIB, East Lansing, MI
Competitively awarded a $5,000 stipend to establish a research program at FRIB/NSCL while taking part in a short term stay at FRIB/NSCL. One of only two awardees.

Gonzaga Science Research Program Grant — Summer 2016 & 2017
Gonzaga University, Spokane, WA
Received funding for myself and undergraduates to perform Monte Carlo simulations of nuclear particle detector efficiency and related calculations for the Prototype AT-TPC device.

Nuclei in the Cosmos XIV Best Poster Award Winner — June 21, 2016
Nuclei in the Cosmos XIV, Niigata, Japan.
Poster: *Search for α-Cluster Structure in Exotic Nuclei with the Prototype Active Target Time Projection Chamber.*

National Science Foundation Research Opportunity Award — Summer 2015
Received $14,000 in funding for myself and a student to conduct research at NSCL and present our results at the 2015 Fall Meeting of American Physical Society Division of Nuclear Physics.

Sophomore Research Program Grant — Spring & Summer 2015
College of Wooster, Wooster, OH
Received funding for undergraduate research assistant, who performed nuclear reactions calculations and gas calibration tests with the Prototype AT-TPC at the College of Wooster, NSCL, and the University of Notre Dame.

APEX Mini Grant for Experiential Learning March 2015
College of Wooster, Wooster, OH
Received $1,115 – one-third of college-wide APEX Mini Grant funding during term – to take Nuclear Physics class students to NSCL to see large-scale nuclear physics research firsthand.

Future Academic Scholars in Teaching (FAST) Fellow 2013 to 2014
Michigan State University, East Lansing, MI
Chosen by the MSU Graduate School and Center for the Integration of Research Teaching and Learning (CIRTL) Steering Committee to participate in a mentored teaching program with a focus on investigating how Modern Physics is taught.

College of Natural Science Summer Dissertation Completion Fellowship, Michigan State University, East Lansing, MI 2013 to 2014

NSCL Summer Dissertation Completion Fellowship 2013 to 2014
National Superconducting Cyclotron Laboratory, East Lansing, MI

Physics Department Writing Prize May 2009
Wabash College, Crawfordsville, IN

Harold Q Fuller Prize in Physics: Top Junior Major April 2008
Wabash College, Crawfordsville, IN

Professional Workshops & Schools

PICUP Summer Faculty Development Workshop for Integration of Computational Physics into Undergraduate Curriculum July 2017
University of Wisconsin at River Falls, River Falls, WI

Gonzaga Center for Teaching and Advising Course Design Institute Spring 2017
Gonzaga University, Spokane, WA

Active Targets & Time Projection Chambers for Nuclear Physics Experiments Workshop May 2015
Michigan State University, East Lansing, MI

TALENT Course 6: Theory for Exploring Nuclear Reactions Experiments July 2013
Grand Accélérateur National d'Ions Lourds (GANIL), Caen, France

FN Tandem Van de Graaff Accelerator Operator's School February 2013
Nuclear Science Laboratory, University of Notre Dame, South Bend, IN

Second UIO-MSU-ORNL School on Nuclear Physics January 2011
Michigan State University, East Lansing, MI

Academic & Community Service

Gonzaga University, Spokane, WA
- Academic Technology Advisory Council, Faculty Rep. 2017 to Present
- Radiation Safety Officer 2016 to Present
- Physics Journal Club, Initiator and Faculty Moderator 2015 to Present
- Society of Physics Students, Faculty Moderator 2015 to 2017
- Nuclear Physics DC Day Participant, Washington DC May 22, 2017

American Physical Society

- Conference Experience for Undergraduates Review Comm. Member — 2016 to Present
- 2017 Fall Meeting of APS DNP, Session Chair — October 28, 2017
- 2016 APS April Meeting, Session Chair — April 17, 2016
- 2015 Fall Meeting of APS DNP, Session Chair — October 30, 2015
- DNP Education Committee, Inaugural Graduate Student Rep. — 2013 to 2014

The College of Wooster, Wooster, OH

- Colloquium Coordinator — 2014 to 2015

Michigan State University, East Lansing, MI

- NSCL Tour Guide — 2010 to 2014
- Graduate Student and REU Student Mentor — 2011 to 2014
- Graduate Recruitment Committee Rep. — 2012 to 2014
- Sub-Committee on Revisions to Graduate Curriculum Rep. — 2012 to 2013
- Nuclear Physics DC Day Participant, Washington DC — May 6, 2013
- NSCL Seminar Committee Rep. — 2011 to 2012
- NSCL Outreach Committee Rep. — 2010 to 2011
- Physics of Atomic Nuclei (PAN) Program Volunteer — 2009 to 2011

Affiliations & Memberships

The Active-Target Time-Projection Chamber Collaboration
Advanced Laboratory Physics Association
American Association of Physics Teachers
American Physical Society
Council on Undergraduate Research
Joint Institute for Nuclear Astrophysics Center for the Evolution of the Elements

Courses Taught

Gonzaga University, Spokane, WA

- Scientific Physics I, Lecture and Lab
- Scientific Physics II, Lecture and Lab
- Science Inquiry: Scientific Truth & Method
- Science Inquiry Lab
- General Physics II Lab
- Computational Physics
- Nuclear and Particle Physics

The College of Wooster, Wooster, OH

- Algebra Physics II, Lecture and Lab
- Modern Physics
- Electronics, Lecture and Lab
- Nuclear Physics

Undergraduate Research Students

Henry Thurston, Gonzaga University — Summer 2017

- First Project Title: "3 Body Nuclear Kinematic Modeling"
  - Will present poster at 2017 Fall Meeting of APS DNP, October 26, 2017
- Second Project Title: "Finding a Relation Between Galactic Redshift and Radial Distance"
  - Presented talk at Pacific Northwest Mathematical Association of America 2017 Section Meeting
- Both posters to be presented at Gonzaga ZagFam Weekend 2017

Joey Gutierrez and Jourden Simmons, Gonzaga University — Summer 2016

- Joint Project Title: "Monte Carlo Acceptance Simulations for the Prototype AT-TPC"
- Presented poster at 2016 Fall Meeting of APS DNP, October 14, 2016 and at Murdock College Science Research Conference, November 4, 2016

Michael Wolff, College of Wooster — Spring & Summer 2015

- Sophomore Research Assistant Project, Spring: "Calculations for Resonant α Scattering of He Isotopes"
- Sophomore Research Assistant Project, Summer: "Measurement of Gain and Drift Velocity of the Prototype AT-TPC"
- Presented summer poster at 2015 Fall Meeting of APS DNP, October 29, 2015

Nicolae Istrate, College of Wooster — 2014 to 2015

- Senior Thesis with Honors: "Theoretical Resonance Calculations for the Isobaric Analogs ^{133}Sn and ^{133}Sb"
- Presented poster at Senior Research Symposium, April 24, 2015

Min Sung Kim, College of Wooster — 2014 to 2015

- Senior Thesis: "Stopping Power Analysis of ^{37}K, ^{44}Cl, and ^{71}Br Incident on a He:CO_2 (9:1) Gas Target"
- Presented poster at Senior Research Symposium, April 24, 2015

Johanna Malaer, College of Wooster — Spring 2015

- Junior Thesis: "Strong Gravitational Lensing and The Shell Theorem"
- Presented talk at Junior Independent Study Physics Colloquium, April 28, 2015

Diego Miramontes Delgado, College of Wooster — Spring 2015

- Junior Thesis: "Binding Energy Changes in Big Bang Nucleosynthesis and their effect on the Shape of the Universe"
- Presented talk at Junior Independent Study Physics Colloquium, April 28, 2015

Michael Bush, College of Wooster — Fall 2014

- Junior Thesis: "Impact of the Gravitational Force on Star Formation"
- Presented talk at Junior Independent Study Physics Colloquium, Dec. 2, 2014

PEER-REVIEWED PUBLICATIONS

UNDERLINE DENOTES UNDERGRADUATE RESEARCH STUDENT

21. EC Pollacco, et al., "GET: A generic and comprehensive electronics system for nuclear physics experiments," submitted to *NIM A* (2017).

20. D Bazin, J Bradt, Y Ayyad, W Mittig, T Ahn, S Beceiro-Novo, L Carpenter, M Cortesi, **A Fritsch**, JJ Kolata, W Lynch, N Watwood, "The Active Target Time Projection Chamber at NSCL," submitted to EPJ Web of Conferences (2017).

19. **A Fritsch**, Y Ayyad, D Bazin, S Beceiro-Novo, J Bradt, L Carpenter, M Cortesi, W Mittig, D Suzuki, T Ahn, JJ Kolata, AM Howard, FD Becchetti, M Wolff, "Search for α-Cluster Structure in Exotic Nuclei with the Prototype Active-Target Time-Project Chamber," JPS Conf. Proc. **14**, 021105 (2017).

18. D Suzuki, T Ahn, D Bazin, FD Becchetti, S Beceiro-Novo, **A Fritsch**, JJ Kolata, W Mittig, for the AT-TPC Collaboration, "Cluster structure of neutron-rich ^{10}Be and ^{14}C via resonant alpha scattering," Il Nuovo Cimento **39 C**, 372 (2017).

17. JJ Kolata, AM Howard, W Mittig, T Ahn, D Bazin, FD Becchetti, S Beceiro-Novo, Z Chajecki, M Febbraro, **A Fritsch**, WG Lynch, A Roberts, A Shore, RO Torres-Isea, "Fusion studies with low-intensity radioactive ion beams using an active-target time projection chamber," *NIM A*, 830, 82-87 (2016).

16. T Ahn, DW Bardayan, D Bazin, S Beceiro Novo, FD Becchetti, J Bradt, M Brodeur, L Carpenter, Z Chajecki, M Cortesi, **A Fritsch**, MR Hall, O Hall, L Jensen, JJ Kolata, WG Lynch, W Mittig, P O'Malley, D Suzuki, "The Prototype Active-Target Time-Projection Chamber used with *TwinSol* Radioactive-Ion Beams," *NIM B*, 376, 321-325 (2016).

15. **A Fritsch**, S Beceiro-Novo, D Suzuki, W Mittig, JJ Kolata, T Ahn, D Bazin, FD Becchetti, B Bucher, Z Chajecki, X Fang, M Febbraro, AM Howard, Y Kanada-En'yo, WG Lynch, AJ Mitchell, M Ojaruega, AM Rogers, A Shore, T Suhara, XD Tang, R Torres-Isea, H Wang, "One-dimensionality in atomic nuclei: a candidate for linear-chain α clustering in ^{14}C," Phys. Rev. C, **93**, 014321 (2016).

14. W Mittig, S Becerio, **A Fritsch**, F Abu-Nimeh, D Bazin, T Ahn, WG Lynch, F Montes, A Shore, D Suzuki, N Usher, J Yurkon, JJ Kolata, A Howard, AL Roberts, XD Tang, FD Becchetti, "Active Target Detectors for Studies with Exotic Beams: Present and Next Future," *NIM A*, 784, 494-498 (2015).

13. D Suzuki, A Shore, W Mittig, JJ Kolata, D Bazin, M Ford, T Ahn, FD Becchetti, S Beceiro Novo, D Ben Ali, B Bucher, J Browne, X Fang, M Febbraro, **A Fritsch**, E Galyaev, AM Howard, N Keeley, WG Lynch, M Ojaruega, AL Roberts, XD Tang, "Resonant α scattering of ^{6}He: Limits of clustering in ^{10}Be," Phys. Rev. C **87**, 054301 (2013).

12. D Suzuki, M Ford, D Bazin, W Mittig, WG Lynch, T Ahn, S Aune, E Galyaev, **A Fritsch**, J Gilbert, F Montes, A Shore, J Yurkon, JJ Kolata, J Browne, A Howard, AL Roberts, XD Tang, "Prototype AT-TPC: Toward a new generation active target time projection chamber for radioactive beam experiments," *NIM A*, 691, 39-54 (2012).

11. D. Suzuki, D. Bazin, W. Mittig, W.G. Lynch, C. Hewko, A. Roux, D. Ben Ali, J. Browne, E. Galyaev, M. Ford, **A. Fritsch**, J. Gilbert, F. Montes, A. Shore, G. Westfall, J. Yurkon, "Test of a micromegas detector with helium-based gas mixtures for active target time projection chambers utilizing radioactive isotope beams," *NIM A*, 660 (1), 64-68 (2011).

10. A Schuh, **A Fritsch**, JQ Ginepro, M Heim, A Shore, M Thoennessen, "Discovery of the Silver Isotopes," *Atomic Data and Nuclear Data Tables*, 96 (5), 531-540 (2010).

9. A Shore, **A Fritsch**, M Heim, A Schuh, M Thoennessen, "Discovery of the Vanadium Isotopes," *Atomic Data and Nuclear Data Tables*, 96 (4), 351-357 (2010).

8. M Heim, **A Fritsch**, A Schuh, A Shore, M Thoennessen, "Discovery of the Krypton Isotopes," *Atomic Data and Nuclear Data Tables*, 96 (4), 333-340 (2010).

7. **A Fritsch**, JQ Ginepro, M Heim, A Schuh, A Shore, M Thoennessen, "Discovery of the Tungsten Isotopes," *Atomic Data and Nuclear Data Tables*, 96 (3), 315-322 (2010).

6. A Schuh, **A Fritsch**, JQ Ginepro, M Heim, A Shore, M Thoennessen, "Discovery of the Gold Isotopes," *Atomic Data and Nuclear Data Tables*, 96 (3), 307-314 (2010).

5. A Shore, **A Fritsch**, M Heim, A Schuh, M Thoennessen, "Discovery of the Arsenic Isotopes," *Atomic Data and Nuclear Data Tables*, 96 (3), 299-306 (2010).

4. A Schuh, **A Fritsch**, M Heim, A Shore, M Thoennessen, "Discovery of the Iron Isotopes," *Atomic Data and Nuclear Data Tables*, 96 (6), 817-823 (2010).

3. A Shore, **A Fritsch**, JQ Ginepro, M Heim, A Schuh, M Thoennessen, "Discovery of the Barium Isotopes," *Atomic Data and Nuclear Data Tables*, 96 (6), 749-758 (2010).

2. G Christian, WA Peters, D Absalon, D Albertson, T Baumann, D Bazin, E Breitbach, J Brown, PL Cole, D Denby, PA DeYoung, JE Finck, H Frank, **A Fritsch**, C Hall, AM Hayes, J Hinnefeld, CR Hoffman, R Howes, B Luther, E Mosby, S Mosby, D Padilla, PV Pancella, G Peaslee, WF Rogers, A Schiller, MJ Strongman, M Thoennessen, LO Wagner, "Production of Nuclei in Neutron Unbound States via Primary Fragmentation of ^{48}Ca," *Nucl. Phys. A* **801** 101 (2008).

1. JJ Kolata, H Amro, FD Becchetti, JA Brown, PA DeYoung, M Hencheck, JD Hinnefeld, GF Peaslee, **AL Fritsch**, C Hall, U Khadka, PJ Mears, P O'Rourke, D Padilla, J Rieth, T Spencer, T Williams, "Breakup of ^{6}He Incident on ^{209}Bi Near the Coulomb Barrier," Phys. Rev. C **75**, 031302(R) (2007).

Seminars & Conference Presentations

Underline Denotes Undergraduate Research Student

28. A Fritsch, M Cortesi, W Mittig, to be given October 26, 2017. *Multi-layer Thick Gas Electron Multiplier (M-THGEM) Simulations at Low Pressure for High-Gain Operation*, 2017 Fall Meeting of the American Physical Society Division of Nuclear Physics, Pittsburgh, PA.

27. A Fritsch, to be given October 7, 2017. *Total Eclipse of the Mind*, ZagFam Weekend Academic Session Lecture, Gonzaga University, Spokane, WA.

26. A Fritsch, February 1, 2017. **Invited seminar.** *Search for α-cluster Structure in Exotic Nuclei with the Prototype AT-TPC*, Reed College, Portland, OR.

25. A Fritsch, June 27, 2016. **Invited seminar.** *Studies in α-Cluster Structure with the Active Target-Time Projection Chamber (AT-TPC)*, Hokkaido University, Sapporo, Japan.

24. A Fritsch, June 21, 2016. Poster: *Search for α-Cluster Structure in Exotic Nuclei with the Prototype Active Target Time Projection Chamber*. Nuclei in the Cosmos XIV, Niigata, Japan. **Symposium Best Poster Award Winner**.

23. A Fritsch, April 23, 2016. *Secrets of the Atomic Nucleus*, Gonzaga Faculty Neighborhood Cafe, Gonzaga University, Spokane, WA.

22. A Fritsch, Y Ayyad, D Bazin, S Beceiro-Novo, J Bradt, L Carpenter, M Cortesi, W Mittig, D Suzuki, T Ahn, AM Howard, JJ Kolata, FD Becchetti, April 17, 2016. *Search for α-Cluster Structure in Exotic Nuclei with the Prototype Active-Target Time-Projection Chamber*, 2016 American Physical Society April Meeting, Salt Lake City, UT.

21. A Fritsch, Y Ayyad, D Bazin, S Beceiro-Novo, J Bradt, W Mittig, T Ahn, A. Howard, JJ Kolata, F Becchetti, M Wolff, October 29, 2015. *3-Body Decay of Cluster States in ^{14}C*, 2015 Fall Meeting of the American Physical Society Division of Nuclear Physics, Santa Fe, NM.

20. A Fritsch, July 22, 2015. *From Graduate School to College: Pursing a Career at a Primarily Undergraduate Institution*, Joint Physics Graduate Organization & Women and Minorities in Physics Seminar, Michigan State University, East Lansing, MI.

19. A Fritsch, May 19, 2015. *One-dimensional alignment of α particles in atomic nuclei*, Active Targets & Time Projection Chambers for Nuclear Physics Experiments Workshop, National Superconducting Cyclotron Laboratory, East Lansing, MI.

18. A Fritsch, March 20, 2015. **Invited seminar.** *One-dimensional alignment of α particles in atomic nuclei*, Physics Colloquium Series, Kenyon College, Gambier, OH.

17. A Fritsch, March 17, 2015. **Invited seminar.** *One-dimensional alignment of α particles in atomic nuclei*, Gonzaga University, Spokane, WA.

16. A Fritsch, February 12, 2015. **Invited seminar.** *One-dimensional alignment of α particles in atomic nuclei*, University of Dallas, Irving, TX.

15. A Fritsch, December 15, 2014. **Invited seminar.** *One-dimensional alignment in atomic nuclei*, University of Scranton, Scranton, PA.

14. A Fritsch, October 16, 2014. **Invited seminar.** *Nuclear Alpha Clustering & Statistics on Students in Physics*, Physics Colloquium Series 2014-2015, The College of Wooster, Wooster, OH.

13. A Fritsch, S Beceiro-Novo, D Suzuki, W Mittig, T Ahn, D Bazin, Z Chajecki, W Lynch, A Shore, J Kolata, A Howard, A Roberts, X Tang, F Becchetti, October 11, 2014. *Search for Cluster Structure in ^{14}C by Investigation of $^{10}Be + {}^{4}He$ Resonant Scattering with the Prototype AT-TPC*, Fourth Joint Meeting of the Nuclear Physics Divisions of the American Physical Society and the Physical Society of Japan, Hilton Waikaoloa Village, Hawaii.

12. A Fritsch, May 7, 2014. *How can clicker questions be implemented in a lecture for improved learning in Modern Physics?* Future Academic Scholars in Teaching (FAST) Fellowship Program Symposium, Michigan State University, East Lansing, MI.

11. A Fritsch, March 24, 2014. *The Search for Cluster Structure in ^{14}C with the Prototype AT-TPC*, NSCL, Graduate Student Seminar, National Superconducting Cyclotron Laboratory, East Lansing, MI.

10. A Fritsch, March 20, 2014. **Invited seminar.** *The Search for Cluster Structure in ^{14}C with the Prototype AT-TPC*, NSCL Research Discussion Seminar, National Superconducting Cyclotron Laboratory, East Lansing, MI.

9. A Fritsch, March 4, 2014. **Invited seminar.** *Pushing the Envelope of Science: Exploring Nature on the Nuclear Scale*, Wabash College, Crawfordsville, IN.

8. A Fritsch, February 24, 2014. **Invited seminar.** *Pushing the Envelope of Science: Exploring Nature on the Nuclear Scale*, The College of Wooster, Wooster, OH.

7. A Fritsch, D Suzuki, W Mittig, T Ahn, D Bazin, F Becchetti, Z Chajecki, J Kolata, A Howard, W Lynch, A Roberts, A Shore, X Tang, October 24, 2013. *Search for Cluster Structure in ^{14}C by Investigation of $\alpha(^{10}Be,^{10}Be^*)\alpha'$ Scattering with the Prototype AT-TPC*, 2013 Fall Meeting of the American Physical Society Division of Nuclear Physics, Newport News, VA.

6. A Fritsch, M Heim, T Baumann, S Mosby, A Spyrou, M Thoennessen, January 30, 2009. Poster: *Geant4 Simulation of MoNA*. Celebration of Student Research, Wabash College.

5. A Fritsch, S Krutz, T Pizarek, M Madsen, January 30, 2009. Poster: *Band Gap Energies of Silicon and Germanium.* Celebration of Student Research, Wabash College.

4. A Fritsch, M Heim, T Baumann, S Mosby, A Spyrou, M Thoennessen, October 24, 2008. Poster: *Geant4 Simulation of MoNA*. 2008 Annual Fall Meeting of the American Physical Society Division of Nuclear Physics, Conference Experience for Undergraduates (CEU) Poster Session, Oakland, California.

3. A Fritsch, September 24, 2008. *MoNA: The Modular Neutron Array.* Wabash College Physics Colloquium.

2. A Fritsch, T Pizarek, K Prifogle, S Shrestha, M Madsen, January 26, 2007. Poster: *The Circular Motion of an Electron Beam in Real Helmholtz Coils.* Celebration of Student Research, Wabash College.

1. A Fritsch, P O'Rourke, J Brown, for the MoNA Collaboration.; January 26, 2007. Poster: *Nuclear Physics at the National Superconducting Cyclotron Laboratory (NSCL) with the Modular Neutron Array (MoNA).* Celebration of Student Research, Wabash College.

Last updated: September 18, 2017