KatrinaKoehler

Assistant Professor and R&D Scientist

contact

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languages

English mother tongue
French (B2)
Koine Greek (A1)

programming

Python, Matlab, LabView,
C#, C++ with ROOT libraries,
FORTRAN, Java, MCNP

miscellaneous technical skills

LaTeX, Linux/Unix/Windows OS,
G Suite, git, MS Office

hobbies

volunteering at church, cooking,
acting and directing,
homesteading-related hobbies,
dancing, powerlifting, hiking

education

2016–2019 **PhD** in Nuclear Physics — Western Michigan University, Kalamazoo, MI
Sensitivity of the Theoretical Electron Capture Shape and Comparisons to Experiment
GPA: 4.00/4.00

2012–2014 **Masters** of Arts in Physics — Western Michigan University, Kalamazoo, MI
GPA: 4.00/4.00

2007–2011 **Bachelor** of Science in Physics and Mathematics — Houghton College, Houghton, NY
Cross Section Measurements for Quasielastic Neutron-Induced Deuteron Breakup
GPA: 4.00/4.00

teaching experience

2021–present **Houghton College** — Houghton, NY
Assistant Professor of Physics (2021–2025)
Associate Professor of Physics (2025–present)
Taught the following courses:

- General Physics I
- General Physics II
- Modern Physics
- Quantum Mechanics
- Numerical Analysis
- Data for Good
- Programming I
- Data Science I
- Data Science II
- Project Lab

Mentored the following students in undergraduate research:

- Timothy Ockrin (Fall 2021 – Spring 2024)
- Wesley Stevick (Fall 2023)
- Adam Brown (Spring 2022 – Spring 2023)
- Jonathon Zdunski (Fall 2021 – Spring 2022)

professional references

Brandon Hoffman
Physics Department
Houghton College
Houghton, NY
brandon.hoffman@houghton.edu
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Vladimir Henzl
Principal Investigator
Los Alamos National Laboratory
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Mark Croce
Principal Investigator
Los Alamos National Laboratory
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character and spiritual reference

Charles F. McCullough
Mentor and Pastor
Los Alamos, NM
chuckmccullough1@gmail.com
cell: +1 (505) 980 5261
work cell: +1 (505) 709 7199

2015–2021 **Los Alamos National Laboratory** Los Alamos, NM
Mentor
Mentored and supervised the following students:
- Daniel McNeel, postdoc (September 2020–July 2021)
- Sophie Weidenbenner, post-baccalaureate student (August 2020–July 2021, PhD committee member)
- Michael Teti, graduate student (July 2020–July 2021)
- Sebastian Salazar, undergraduate student (June 2020–July 2021)
- Krystel de Castro, post-baccalaureate student (June 2020–Sept 2020)
- Katherine Schreiber, postdoc (April 2020–August 2021)
- Chandler Smith, post-baccalaureate student (July 2019–August 2021)
- Aidan Tollefson, post-baccalaureate student (July 2019–June 2020)
- Shannon Kossmann, undergraduate student (June 2017–August 2017, January 2019–March 2019)
- Klara Mateju, undergraduate student (June 2017–August 2017)
- Christopher McGahee, graduate student (June 2015–August 2015, June 2016–August 2016)

2018–2021 **Los Alamos National Laboratory** Los Alamos, NM
Student Liaison
- Organized lecture series and social hours
- Provided students with information regarding professional development opportunities

2020–2021 **Los Alamos National Laboratory** Los Alamos, NM
Nuclear Material Control and Accountancy Instructor and Curriculum Developer
- Taught a month-long unit on Nuclear Material Control and Accountancy for the pilot National Security Education and Technology certificate course, accredited with the University of New Mexico. The course totaled 15 students and met for 65 minutes four times a week.
- Developed curriculum and prepared lectures, laboratories, assignments, and quizzes.
- Held regular office hours and assisted students after hours.

2016–2021 **Girls in STEM** Los Alamos, NM
STEM Mentor and co-PI
- Participated in a 7-year longitudinal study probing the effects of mentorship on the attitudes toward STEM of underprivileged girls in Northern New Mexico.
- Assisted in a couple week-long summer camps, exploring waves—sound and brain—and dinosaurs.
- Developed curriculum and led a week-long summer camp on nuclear radiation.
- Developed curriculum and led a 3-day intensive winter camp on programming fundamentals.
- Initiated and organized a bi-weekly study hall to provide girls with technical skills in programming.

2019–2021, 2025 **Los Alamos National Laboratory** Los Alamos, NM

Safeguards Instructor and Curriculum Developer

- Developed curriculum and instructed for Nuclear Material Control and Accountancy unit of second Nuclear Enterprise Science & Technology (NEST) Nuclear Facility Fundamentals (NFFW 1110) course (July 2025)
- Developed curriculum and instructed Nuclear Material Control and Accountancy unit for first NEST NFFW 1110 course (March 2021)
- Instructor for a week-long Nuclear Material Control and Accountancy class (January 2021)
- Instructor for gamma spectroscopy labs and lectures for SEE LANL, a nuclear safeguards and nonproliferation exposure course for undergraduate and graduate students; tested newly developed curriculum (January 2020)
- Instructor for gamma spectroscopy and neutron coincidence labs for the International Nuclear Safeguards Engagement Program (September 2019)
- Instructor for neutron coincidence labs for the Nuclear Science and Consortium Student Summer School (June 2019)
- Instructor for neutron coincidence labs and lectures for SEE LANL, a nuclear safeguards and nonproliferation exposure course for undergraduate and graduate students (January 2019)

2014 **Western Michigan University** Kalamazoo, MI

Instructor

- Taught one section of an intro-level physics course for majors and non-majors, totaling 71 students. The course met for an hour every weekday.
- Developed curriculum and prepared lectures, assignments, quizzes, and exams.
- Supervised an undergraduate TA grader.
- Voluntarily attended regular help sessions and held office hours.

2009–2011 **Houghton College** Houghton, NY

Physics Teaching Assistant

- Led regular help sessions, assisted students individually and in small groups using a discussion-based approach to problem solving, and guided students in preparing for exams.
- Guided students in using proper laboratory techniques during a weekly lab session.
- Graded homework for General Physics, Mechanics I, and Mechanics II, using a self-created grading rubric.
- Discussed with the professor the areas in which the students had difficulties.

2008–2011 **Houghton College** Houghton, NY

Math Teaching Assistant

- Assisted during regular class discussions of 15-40 students, answering questions concerning subject material and technology use in class.
- Led a weekly help session of 5-10 students, employing the Socratic teaching method to help students understand the material on their own. Used individualized approaches for each student.
- Graded homework, following both an assigned rubric and a self-created grading rubric.

2008–2009 **Houghton College** Houghton, NY

Math Tutor and Accountability Partner

- Assisted students in writing up and solving homework problems in Calculus II and College Maths.
- Provided academic accountability for students with learning disabilities.

research experience

2021–present **Houghton College** Houghton, NY
Undergraduate Research Advisor
Led undergraduate students in the following research projects:
- Simulating particle transport from beta decay within a low temperature detector using EGSnrc (Spring 2022 – Fall 2023)
- Simulating particle transport from alpha decay within a low temperature detector using Geant4 (Fall 2022 – Spring 2024)
- Simulating low temperature detector pulse data streams using python (Fall 2021 – Spring 2022)
- Simulating neutron multiplicity measurements of thorium and uranium oxide using MCNP (Fall 2021 – Spring 2022)

2019–present **Los Alamos National Laboratory** Los Alamos, NM
Scientist II
Participated on the low temperature detectors for safeguards team and the DYMAC team.
- Analyzed gamma, x-ray, and decay energy spectroscopy data from microcalorimeter systems.
- Used the Los Alamos Suite of Atomic Physics Codes to calculate atomic spectra for microcalorimeter x-ray measurements.
- Developed analysis tools for microcalorimeter data.
- Developed a simulation toolkit for determining the advantages of process monitoring for diversion detection.

2016–2019 **Los Alamos National Laboratory** Los Alamos, NM
Graduate Researcher
Participated on the low temperature detectors for safeguards team, assisting in theory development for hyperspectral X-ray imaging data, developing analysis tools for microcalorimeter data, and determining the feasibility of measuring the neutrino mass using electron capture in ^{163}Ho.

2014–2016 **Los Alamos National Laboratory** Los Alamos, NM
Post-Masters Researcher
Participated in a Neutron Multiplicity team and on various NA-241 funded projects imaging alpha-induced radioluminescence, measuring self-induced x-ray fluorescence of spent nuclear fuel, determining sensitivity of instruments for complementary access, and developing a communication link with an unmanned aerial vehicle equipped with radiation sensors.

2012–2014 **Western Michigan University** Kalamazoo, MI
Graduate Research Assistant
Participated on various research projects including mass measurements of exotic neutron-rich nuclei and studying the effects of neutron stars' magnetic fields on the chiral asymmetry of amino acids.

Summer 2013 **Los Alamos National Laboratory** Los Alamos, NM
Graduate Research Assistant
Worked in a safeguards group to characterize cryogenic microcalorimeter detectors by developing software tools to acquire and analyze data.

2011–2012 **Los Alamos National Laboratory** Los Alamos, NM
Post-Bachelor Researcher
Worked in a safeguards group to design, carry out, and analyze data from experiments related to new photon and charged particle detection techniques using cryogenic microcalorimeter detectors.

2009 & 2010 **Los Alamos National Laboratory** Los Alamos, NM
Undergraduate Summer Research Assistant
Participated on a research team to investigate the structure of a deuterium nucleus and explore the implications for Big Bang Nucleosynthesis.

professional development

June 2022 **The Grading Conference: Higher Ed STEM Focus** College Bridge

March 2020 **Advanced Hands-On Gamma-Ray Nondestructive Assay Training Course** LANL

June 2019 **International Nuclear Safeguards Policy Course** Center for Nonproliferation Studies

May 2018 **Machine Learning Mastery Workshop** Enthought

August 2017 **Human Performance Initiative** LANL

Summer 2016 **Seaborg Summer Research Fellowship** LANL

June 2016 **Introductory Course on Nuclear Nonproliferation** PNNL

May 2016 **Japan Nuclear Facilities Experience** Japan

Mar. 2016 **Python for Scientists and Engineers Course** Enthought

Sept. 2015 **Fundamentals of Nondestructive Assay Training Course** LANL

Summer 2015 **NGSI summer lecture series** LANL

awards

2024 **Early Career Excellence Award** Western Michigan University
Alumni achievement award for exceptional promise and outstanding contributions

2024 **Large Team Distinguished Performance Award** Los Alamos National Laboratory
For the development the Hyperspectral X-ray Imaging (HXI) detector

2023 **R&D 100 Award in the Mechanical/Materials category** R&D 100 Awards
For the Hyperspectral X-ray Imaging (HXI) detector

2022 **R&D 100 Award in the IT/Electrical category** R&D 100 Awards
For a Spectrometer Optimized for Facility Integrated Applications (SOFIA)

2022 **Distinguished Performance Award** Los Alamos National Laboratory
Team award for contributions to the Trinity anniversary special issue of Nuclear Technology

2019 **LTD18 Young Researcher Poster Award - 2nd Place** 18th International Workshop on Low Temperature Detectors
Monetary award for best poster presented by a researcher within 5 years of receiving PhD

2019 **George E. Bradley Award.** Western Michigan University
For exceptional overall performance with particular emphasis on excellence in research

2014 **Charles J. Wilcox Memorial** Western Michigan University
$500 Award for academic achievement

2013 **Charles J. Wilcox Memorial** Western Michigan University
$500 Award for academic achievement

2011 **Valedictorian** Houghton College
Graduated summa cum laude

2011 **Senior Physics Award** Houghton College
For highest achieving student graduating with major in physics

2011 **Senior Math Award** Houghton College
For highest achieving student graduating with major in math

nontraditional communication

2004-2018 **Actor** various
Henrietta Leavitt in *Silent Sky*
Annette Raleigh in *God of Carnage*
Mary O'Donnell in *Once a Ponzi Time*
Tilly Frankl in *There's More to Life Than Being Happy*
Solstitia in *Tower of Magic*
Sheila in *An Inspector Calls*
Sister Mary Greenly in *Candlewick*, premiere
Old Gobbo in *Merchant of Venice*
Mrs. Savage in *The Curious Savage*
Mrs. Keller in *The Miracle Worker*
and chorus member in various productions

2015 & 2019 **Director** Los Alamos Little Theater, Los Alamos, NM
Dog Story
Driving While Innocent

2012 **Director and Producer** White Rock Baptist Church, White Rock, NM
Shadowlands

2008–2011 **Director and Producer** Houghton College, Houghton, NY
Doubt, A Parable (2011)
Harlequin, Refined by Love (2010)
Box and Knox (2009)
Measure for Measure (2008)

volunteer teaching

2025–present **Fillmore Wesleyan Church** Fillmore, NY
Young Adult Ministry Leader

2022–2025 **Houghton Wesleyan Church** Houghton, NY
Co-teacher for College Sunday School

2020 **White Rock Baptist Church** White Rock, NM
Middle and High School Sunday School teacher
Developed my own curriculum to teach Hermeneutics using the "obscure and weird" parts of the Bible, with the purpose of also building Biblical literacy.

2018–2019 **White Rock Baptist Church** White Rock, NM
5th and 6th grade Sunday School teacher
Developed my own curriculum to teach an Old Testament Survey class with an emphasis on how the Old Testament points to Jesus, memorization of Scripture, and interactive learning.

2014–2017 **White Rock Baptist Church** White Rock, NM

Youth Leader

Followed provided curriculum and developed my own for leading an inductive Bible study with high school and middle school girls.

professional activities

2024–present **LTD21**
Local Organizing Committee
Assisted in organizing the 21st International Workshop on Low Temperature Detectors.

2021–2022 **Journal of Low Temperature Physics**
Assistant Guest Editor
Found reviewers for submitted papers for a special issue of the Journal of Low Temperature Physics.

2021 **LTD19**
Local Organizing Committee
Assisted in organizing the 19th International Workshop on Low Temperature Detectors.

2019–2021 **Radionuclides@LTD**
Participant (2019–2021)
Participate in quarterly international telecons to discuss microcalorimeter use for radionuclide measurements.

Co-Facilitator (2020–2021)
Organize and facilitate quarterly telecons with international participants on the topics of using low temperature microcalorimeters for radionuclide measurements.

Co-Organizer and Presenter (March 23–26, 2021)
Organized the first international workshop on Decay Energy Spectroscopy with over 50 participants from South Korea, Europe, and the United States.
Presented “A Review of Decay Energy Spectroscopy”.

Nov. 21, 2017 **Tips, Tricks, and Tools of the Trade**
Organizer and Speaker
Organized this multi-speaker presentation to introduce scientists to various tools that might be useful in their workflow.
Presented “Apps for the Spectroscopist”.

academic community engagement

2022–present **Faculty Advisor** Houghton University
Intercultural Student Association

2021–present **Committee Member** Houghton University

- Academic Council (2024–present)
- Revising and Evaluating Student Evaluations of Teaching (reSET) Task Force (2024–present)
- Faculty Development Committee (2022–2024)
- Strategic Planning Committee (2022–2023)
- Standard 5 Accreditation Committee (2021–2022)

publications

✺ *Book Chapter*

✻ *Invited Paper*

✦ *Peer-Reviewed Publications*

Student co-authors whom I have mentored

✦ *Applications of Ultra-High Resolution Microcalorimeter Gamma-Ray Spectrometry*. K.A. Schreiber, M Croce, **K.E. Koehler**, E Stark, D.G. McNeel, M. Carpenter, D.J. Mercer, E. Paige, B Archambault, L. Arrigo, G. Batie, D.T. Becker, D.A. Bennett, B. Bucher, S. Dede, J. Fowler, J.D. Gard, D. Glasgow, K.C. Goetz, C. Gray, C. Harabagiu, J. Hu, M.W. Keller, J.A.B. Mates, C. Mathew, G.C. O'Neil, N.J. Ortiz, L. Pagani, B.D. Pierson, D.R. Schmidt, R.U. Schoenemann, E. Seabury, D.S. Swetz, J.N. Ullom, S.L. Weidenbenner, A.N. Williams (2025). Frontiers in Nuclear Engineering. (accepted).

New Experimentally Observable Gamma-ray Emissions from ^{241}Am Nuclear Decay. **K.E. Koehler**, M.D. Yoho, M.H. Carpenter, M.P. Croce, D.J. Mercer, C.M. Smith, A.D. Tollefson, D.T. Vo, M.A. Famiano, C.D. Nesaraja, D.T. Becker, J.D. Gard, A.L. Wessels, D.A. Bennett, J.A.B. Mates, N.J. Ortiz, D.R. Schmidt, D.S. Swetz, J.N. Ullom, L.R. Vale. (submitted).

E.N. Stark, **K.E. Koehler**, M.H. Carpenter, M.P. Croce, K.I. de Castro, E.A. Feissle, D.J. Mercer, D. McNeel, K.A. Schreiber, S.L. Weidenbenner, R. Winkler, D.T. Becker, J.D. Gard, A.L. Wessels, D.A. Bennett, J.W. Fowler, J.A.B. Mates, N.J. Ortiz, D.R. Schmidt, D.S. Swetz, J.N. Ullom, L.R. Vale. *Improved Nuclear Data for ^{242}Pu Using Nondestructive Microcalorimeter Gamma-Ray Spectroscopy*. (submitted).

✺ D.T. Vo, **K. Koehler**, T.E. Sampson (2024). "Plutonium Isotopic Composition by Gamma-Ray Spectroscopy". In: Geist, W.H., Santi, P.A., Swinhoe, M.T. (eds) *Nondestructive Assay of Nuclear Materials for Safeguards and Security*. Springer, Cham. DOI 10.1007/978-3-031-58277-6_9.

✺ M.T. Swinhoe, N. Ensslin, J.D. Hutchinson, M. Iliev, **K. Koehler** (2024). "Principles of Neutron Coincidence Counting". In: Geist, W.H., Santi, P.A., Swinhoe, M.T. (eds) *Nondestructive Assay of Nuclear Materials for Safeguards and Security*. Springer, Cham. DOI 10.1007/978-3-031-58277-6_17.

✺ D.C. Henzlova, N. Ensslin, A. Favalli, W.H. Geist, L. Holzleitner, **K. Koehler**, M.S. Krick, M.M. Pickrell, T.D. Reilly, J.E. Stewart, K.D. Veal, (2024). "Principles of Neutron Multiplicity". In: Geist, W.H., Santi, P.A., Swinhoe, M.T. (eds) *Nondestructive Assay of Nuclear Materials for Safeguards and Security*. Springer, Cham. DOI 10.1007/978-3-031-58277-6_18.

Improving Uncertainty in Nondestructive Uranium Enrichment Analysis with Microcalorimeter Gamma Spectroscopy. M. Croce, **K. Koehler**, M. Booher, E.S. Teti, J. Ward, D. Vo, D. Mercer, M. Carpenter, K. Schreiber, R. Schoenemann. *Proc. of the INMM Annual Meeting*, Jul 21–Jul 26, 2024.

Decay Energy Spectrometry for Improved Nuclear Material Analysis at the IAEA NML. G.B. Kim, A.R.L. Kavner, T. Parsons-Davis, S. Friedrich, O.B. Drury, D. Lee, X. Zhang, N. Hines, S.T.P. Boyd, S. Weidenbenner, K. Schreiber, S. Martinson, C. Smith, D. McNeel, S. Salazar, **K. Koehler**, M. Carpenter, M. Croce, D. Schmidt, J. Ullom. *Symposium on International Safeguards: Reflecting on the Past and Anticipating the Future*, Oct 31–Nov 4, 2022. Vienna, Austria. `https://arxiv.org/abs/2406.05200`

Quantification of ^{242}Pu with a Microcalorimeter Gamma Spectrometer. D.J. Mercer, R. Winkler, **K.E. Koehler**, D.T Becker, D.A. Bennett, M.H. Carpenter, M.P. Croce, K.I. de Castro, E.A. Feissle, J.W. Fowler, J.D. Gard, J.A.B. Mates, D.G. McNeel, N.J. Ortiz, D. Schmidt, K.A. Schreiber, D.S. Swetz, J.N. Ullom, L.R. Vale, S.L. Weidenbenner, A.L. Wessels. https://arxiv.org/abs/2202.02933

Nuclear Facility Experience with the SOFIA Ultra-High-Resolution Microcalorimeter Gamma Spectrometer. M.P. Croce, D.T. Becker, D.A. Bennett, S.T.P. Boyd, R.H. Cantor, M.H. Carpenter, E.A. Feissle,

S. Friedrich, J.D. Gard, J. Imrek, G.B. Kim, **K.E. Koehler**, J.A.B. Mates, D.G. McNeel, D.J. Mercer, N.J. Ortiz, D.R. Schmidt, K.A. Schreiber, D. Swetz, L.R. Vale, A.L. Wessels, S.L. Weidenbenner, R. Winkler, D. Yan, J.N. Ullom. *Proc. of the INMM Annual Meeting*, Jul 24–Jul 28, 2022.

✦ *Improved Nondestructive Isotopic Analysis with Practical Microcalorimeter Gamma Spectrometers*. M. Croce, D. Becker, **K.E. Koehler**, J Ullom. *Journal of Nuclear Material Management*, vol 49, no 3, December 2021.

✻✦ *Low Temperature Microcalorimeters for Decay Energy Spectroscopy*. **K.E. Koehler**. *Applied Sciences*, vol 11(9), 4044, 2021. DOI 10.3390/app11094044.

✻✦ *Gamma and Decay Energy Spectroscopy Measurements of Trinitite*. D.J. Mercer, **K.E. Koehler**, M.P. Croce, A.S. Hoover, P.A. Hypes, S.A. Kozimor, V. Mocko, P.R.J. Saey. *Nuclear Technology*, 207:sup1, S309-S320, 2021. DOI 10.1080/00295450.2021.1922258.

✦ *High Resolution X-Ray Spectra for Chemical Speciation in the SEM*. K, Schreiber, D. McNeel, **K. Koehler**, C. Smith, B. Stein, G. Wagner, E. Bowes, L. Xu, C. Fontes, E. Batista, P. Yang, M. Rabin, M. Croce, M. Carpenter. *Microscopy and Microanalysis*, 27(S1), 1360-1363. DOI 10.1017/S1431927621005079.

Experimental Validation of NDA Capabilities for MSR Safeguards: First Results. M.H. Carpenter, **K. Koehler**, K. De Castro, D. Mercer, S. Weidenbenner, D. Vo, A. Sagadevan, D. Henzlova, H. Menlove, M. Croce, M. Dion, S. Smith, J. Ullom, D. Becker, J. Sanders, *Proc. of the INMM & ESARDA Joint Virtual Annual Meeting*, Aug 23–Sept 1, 2021.

✦ *First Measurements of Nuclear Detonation Debris with Decay Energy Spectroscopy*. M.P. Croce, **K.E. Koehler**, V. Mocko, A.S. Hoover, S.A. Kozimor, D.R. Schmidt, J.N. Ullom. *Weapons Research Letters*, 2021.

✦ *Measurement of ^{227}Ac Impurity in ^{225}Ac using Decay Energy Spectroscopy*. A.D. Tollefson, C.M. Smith, M.H. Carpenter, M.P. Croce, M.E. Fassbender, **K.E. Koehler**, L.M. Lilley, E.M. O'Brien, D.R. Schmidt, B.W. Stein, J.N. Ullom, M.D. Yoho, D.J. Mercer. *Applied Radiation and Isotopes*, vol. 172, June 2021. DOI 10.1016/j.apradiso.2021.109693.

✦ *Improved Plutonium and Americium Photon Branching Ratios from Microcalorimeter Gamma Spectroscopy*. M.D. Yoho, **K.E. Koehler**, D.T. Becker, D.A. Bennett, M.H. Carpenter, M.P. Croce, J.D. Gard, J.A. Mates, D.J. Mercer, N.J. Ortiz, D.R. Schmidt, C.M. Smith, D.S. Swetz, A.D. Tollefson, J.N. Ullom, L.R. Vale, A.L. Wessels, D.T. Vo, *NIM A*, vol. 977, Oct 2020. DOI 10.1016/j.nima.2020.164307.

✦ *Automated co-adding and energy calibration of large array microcalorimeter data with zero sample knowledge*. M.D. Yoho, **K.E. Koehler**, S.E. Garner, D.T. Vo, M.P. Croce, *NIM A*, vol. 969, July 2020. DOI 10.1016/j.nima.2020.164056.

Quantitative Analysis of Uranium and Plutonium Using Microcalorimeter Decay Energy Spectroscopy. M.P. Croce, C. Smith, M. Carpenter, **K. Koehler**, D. Mercer, D. Schmidt, A. Tollefson, J. Ullom, M. Yoho, A. Bosko, *Proc. of the 61st INMM Annual Meeting*, July 12-16, 2020.

Advances in Microcalorimeter Gamma Spectroscopy. M. Croce, D. Becker, D. Bennett, M. Carpenter, J. Gard, J.A.B. Mates, D. Mercer, N. Ortiz, D. Schmidt, A. Tollefson, A. Wessels, M. Yoho, D. Vo, **K. Koehler**, J. Ullom, *Proc. of the 61st INMM Annual Meeting*, July 12-16, 2020.

✦ *High-Resolution Chemical-State Mapping and Analysis for Nuclear Safeguards with Microcalorimeter SEM-EDS*. M. Carpenter, M Croce, C Smith, **K.E. Koehler**, *Microscopy and Microanalysis 2020 Proceedings*, July 2020. DOI 10.1017/S1431927620013690.

✦ *Experimental Validation of Calorimetric Electron Capture Spectral Theory with ^{193}Pt*. **K.E. Koehler**, M.W. Rabin, M.H. Carpenter, M.A. Famiano, C.J. Fontes, D.R. Schmidt, C.M. Smith, A.D. Tollefson, J.N. Ullom, M.D. Yoho, M.P. Croce, *Journal of Low Temperature Physics*, vol. 200, 2020. DOI 10.1007/s10909-020-02465-8.

✦ *Hyperspectral X-ray Imaging with TES Detectors for Nanoscale Chemical Speciation Mapping*. M.H Carpenter, M.P. Croce, Z.K. Baker, E.R. Batista, M.P. Caffrey, C.J. Fontes, **K.E. Koehler**,

S.E. Kossmann, K.G. McIntosh, M.W. Rabin, B.W. Renck, G.L. Wagner, M.P. Wilkerson, P. Yang, M.D. Yoho, J.N. Ullom, D.A. Bennett, G.C. O'Neil, C.D. Reintsema, D.R. Schmidt, G.C. Hilton, D.S. Swetz, D.T. Becker, J.D. Gard, J. Imrek, J.A.B. Mates, K.M. Morgan, D. Yan, A.L. Wessels, R.H. Cantor, J.A. Hall, D.T. Carver, *Journal of Low Temperature Physics*, vol. 200, 2020. DOI 10.1007/s10909-020-02456-9.

Practical Microcalorimeter Spectrometers. M.P. Croce, **K.E. Koehler**, M.H. Carpenter, M.D. Yoho, S.E. Kossmann, S.E. Garner, M.W. Rabin, D.T. Becker, D.A. Bennett, J.D. Gard, J.A.B. Mates, N.J. Ortiz, D.R. Schmidt, A.L. Wessels, J.N. Ullom, *Proc. of the 60th INMM Annual Meeting*, Palm Desert, CA, July 14-18, 2019.

- *Advances in Analysis of Microcalorimeter Gamma-Ray Spectra*. D.T. Becker, B.K. Alpert, D.A. Bennett, M.P. Croce, J.W. Fowler, J.D. Gard, A.S. Hoover, Y. Joe, **K.E. Koehler**, J.A.B. Mates, G.C. O'Neil, M.W. Rabin, C.D. Reintsema, D.R. Schmidt, D.S. Swetz, P.Szypryt, L.R. Vale, A.L. Wessels, J.N. Ullom, *Nuclear Science, IEEE Transactions on*, vol. 66, no. 12, 2019. DOI 10.1109/TNS.2019.2953650.
- *First Calorimetric Measurement of Electron Capture in ^{193}Pt with a Transition Edge Sensor*. **K.E. Koehler**, M.A. Famiano, C.J. Fontes, T.W. Gorczyca, M.W. Rabin, D.R. Schmidt, J.N. Ullom, M.P. Croce, *Journal of Low Temperature Physics*, vol. 193, 2018. DOI 10.1007/s10909-018-1984-2.
- *Implementation of microcalorimeter array technology for safeguards of nuclear material*. S. Kossmann, K. Mateju, **K. Koehler**, M. Croce, *Journal of Low Temperature Physics*, vol. 193, March 2018. DOI 10.1007/s10909-018-1893-4.
- *Spectral measurements of alpha-induced radioluminescence in various gases*. J. Brett, **K.E. Koehler**, M. Bischak, M. Famiano, J. Jenkins, L. Klankowski, P. Niraula, P. Pancella, R. Lakis, *NIM A*, vol. 874, December 2017. DOI 10.1016/j.nima.2017.08.056.
- *Characterizations of Double Pulsing in Neutron Multiplicity and Coincidence Counting Systems*. **K.E. Koehler**, V. Henzl, S. Croft, D. Henzlova, P. A. Santi, *NIM A*, vol. 832, October 2016. DOI 10.1016/j.nima.2016.06.130.

Diagnosing and Correcting Double Pulsing Effects in Measured Neutron Multiplicity Rates. **K.E. Koehler**, V. Henzl, S. Croft, W. Geist, P. A. Santi, *Proc. of the 57th INMM Annual Meeting*, Atlanta, GA, July 23-28, 2016.

The Badlands of Neutron Multiplicity Counting. **K.E. Koehler**, V. Henzl, D. Henzlova, W. Geist, *Proc. of the 57th INMM Annual Meeting*, Atlanta, GA, July 23-28, 2016.

FastTap and FastTrain: How to Create Neutron Multiplicity Pulse Train Data When You Are Not an Experimentalist. V. Henzl, **K.E. Koehler**, C.O. McGahee, *Proc. of the 57th INMM Annual Meeting*, Atlanta, GA, July 23-28, 2016.

Extracting Gate Utilization Factors. S. Croft, T. Cutler, A. Favalli, W. Geist, V. Henzl, D. Henzlova, **K. Koehler**, B. Parker, P. Santi, *Proc. of the 57th INMM Annual Meeting*, Atlanta, GA, July 23-28, 2016.

Evaluation of Advanced Dytlewski-based Deadtime Correction Algorithm for Neutron Multiplicity Counting Algorithms. D. Henzlova, T. Cutler, S. Croft, A. Favalli, W. Geist, V. Henzl, **K. Koehler**, B. Parker, P. Santi, *Proc. of the 57th INMM Annual Meeting*, Atlanta, GA, July 23-28, 2016.

Characterizing Dead Time of Neutron Multiplicity Counters Using Rossi-Alpha Distributions. **K.E. Koehler**, V. Henzl, D. Hauck, D. Henzlova, P.A. Santi, *Proc. of the 56th INMM Annual Meeting*, Indian Wells, CA, July 12-16, 2015.

Imaging Alpha-Induced Radioluminescence Using the Digital Cherenkov Viewing Device. R.E. Lakis, **K.E. Koehler**, V. Henzl, A. Pugmire, A. Favalli, D. Desimone, M. Browne, *Proc. of the 56th INMM Annual Meeting*, Indian Wells, CA, July 12-16, 2015.

Simulation Study to Develop Spatial Multiplication Model in Neutron Multiplicity Counting. V. Henzl, **K.E. Koehler**, P.A. Santi, *Proc. of the 56th INMM Annual Meeting*, Indian Wells, CA, July 12-16, 2015.

Characterization Measurements of the Differential Die-Away Self-Interrogation Instrument. A.C. Kaplan, A. Belian, **K. Koehler**, V. Henzl, M. Swinhoe, H. Menlove, M. Flaska, S. Pozzi, *Proc. of the 56th INMM Annual Meeting*, Indian Wells, CA, July 12-16, 2015.

- *Determining Amino Acid Chirality in the Supernova Neutrino Processing Model*. M. Famiano, R. Boyd, T. Kajino, T. Onaka, **K. Koehler**, S. Hulbert. *Symmetry*, vol. 6, no. 4, November 2014. DOI 10.3390/sym6040909

- *Eight-Channel TES Microcalorimeter System for Detector and Source Development*. M.P. Croce, **K.E. Koehler**, G.J. Kunde, M.W. Rabin, E.M. Bond, W.A. Moody, D.R. Schmidt, L.R. Vale, R.D. Horansky, V. Kotsubo, J.N. Ullom. *Applied Superconductivity, IEEE Transactions on*, vol. 23, no. 3, June 2013. DOI 10.1109/TASC.2013.2239692.

- Q *Spectroscopy with Superconducting Transition-Edge Sensor Microcalorimeters*. **K.E. Koehler**, D.A. Bennett, E.M. Bond, M.P. Croce, D.E. Dry, R.D. Horansky, V. Kotsubo, W.A. Moody, M.W. Rabin, D.R. Schmidt, J.N. Ullom, L.R. Vale. *Nuclear Science, IEEE Transactions on*, vol. 60, no. 2, April 2013. DOI 10.1109/TNS.2012.2225639.

- *Lattice Damage in Superconducting Microcalorimeter Detectors*. R.D. Horansky, **K.E. Koehler**, M.P. Croce, G.J. Kunde, M.W. Rabin, B.L. Zink, J.N. Ullom. *Applied Superconductivity, IEEE Transactions on*, vol. 23, no. 3, June 2013. DOI 10.1109/TASC.2013.2237938.

presentations

✻ *Invited Talk*

✴ *Conference and Workshop Presentations*

✦ *Poster*

✻✴ *A Data-Driven Approach to the Great Commission*. ECHO International Agriculture Conference, Fort Myers, FL, Nov 12–14, 2024.

✻ *A Data-Driven Story of the Great Commission*. Science Lecture at Taylor University, April 8, 2024.

✻ *Stars and the Language of God*. Eclipse Chapel Speaker at Taylor University, April 8, 2024.

Stars and the Language of God. Chapel Speaker at Houghton University, April 8, 2024.

✻✴ *A Review of Decay Energy Spectroscopy*. 19^{th} International Workshop on Low Temperature Detectors (LTD19), Jul 19-29, 2021.

✻ *Microcalorimeters: A Bright, Bold Future*.

Advanced Simulation and Computing Physics and Engineering Program Managers Meeting, April, 2021.

SUNY Geneseo Physics & Astronomy Colloquium, April 29, 2021.

WRIG, April 20, 2021.

University of New Mexico Physics and Engineering Colloquium, March 2, 2021.

UNM-LANL-SNL Research Webinar, October 23, 2020.

SEE LANL, January 14, 2020.

Center for Excellence in Nuclear Training and University (CENTAUR), August 21, 2019.

Destructive and Non-destructive Assay of Special Nuclear Material. ETI Module 4. May 4, 2021. *Joint presentation with Jacob Stinnett*.

✻✴ *SAPPY: A Spectral Analysis Program in Python for Microcalorimeter and High-Purity Germanium Data*. International Workshop on Isotopic Analysis of Uranium and Plutonium by Nondestructive Assay Techniques for Nuclear Safeguards, Vienna, Austria, February 16, 2021.

A Mondrian Career. Designing Your Career, Los Alamos National Laboratory, August 4, 2021.

✦ *Hartree-Fock Calculations for Low Intensity X-ray Features*. International Workshop on Theory Frontiers in Actinide Sciences: Chemistry and Materials, Santa Fe, NM, February 2–5, 2020.

✻ *Spectral Calculations of X-ray Emission for Microcalorimeter Measurements: Theoretical basis for small mystery peaks in experimental x-ray measurements*. Laboratoire National Henri Becquerel, Gif sur Yvette, France, Oct 25, 2019.

✦ *Automated Drift Correction, Coadding, and Energy Calibration of Large Array Microcalorimeter Data*. 18th International Workshop on Low Temperature Detectors, Milano, Italy, July 22–26, 2019. *On behalf of Michael D. Yoho*.

✦ *Multi-isotope Experimental Validation of Calorimetric Electron Capture Spectral Theory*. 18th International Workshop on Low Temperature Detectors, Milano, Italy, July 22–26, 2019.

✴ *Multi-Isotope Theory Validation of Calorimetric Electron Capture Spectra*. 5th Joint Meeting of the APS Division of Nuclear Physics, Waikoloa, HI, Oct 23–27, 2018.

✻✶ *Cross-Isotope Validation of Electron Capture Spectral Shape*. Determination of the absolute electron (anti-)neutrino mass, Trento, Italy, March 26–30, 2018.

✦ *Systematic Study of the Theoretical Calorimetric Electron Capture Spectrum*. 17th International Workshop on Low Temperature Detectors, Fukuoka, Japan, July 17–21, 2017.

✦ ^{193}*Pt Electron Capture Spectra with Microcalorimeters*. 17th International Workshop on Low Temperature Detectors, Fukuoka, Japan, July 17–21, 2017.

✶ *Diagnosing and Correcting Double Pulsing Effects in Measured Neutron Multiplicity Rates*. 57th INMM Annual Meeting, Atlanta, GA, July 23-28, 2016.

✶ *The Badlands of Neutron Multiplicity Counting*. 57th INMM Annual Meeting, Atlanta, GA, July 23-28, 2016.

✶ *FastTap and FastTrain: How to Create Neutron Multiplicity Pulse Train Data When You Are Not an Experimentalist*. 57th INMM Annual Meeting, Atlanta, GA, July 23-28, 2016.

✶ *Characterizing Dead Time of Neutron Multiplicity Counters Using Rossi-Alpha Distributions*. 56th INMM Annual Meeting, Indian Wells, CA, July 12-16, 2015.

✶ Q *Spectroscopy with Superconducting Transition-Edge Sensor Microcalorimeters*. 2nd Symposium on Radiation Measurements and Applications (SORMA West 2012), Oakland, CA, May 14–17, 2012.

Deuteron Formation for Big Bang Nucleosynthesis Models.

- ✶ National Conference on Undergraduate Research, Ithaca College, Ithaca, NY, Mar 31 – Apr 2, 2011.
- ✦ XXX Annual Rochester Symposium for Physics Students, University of Rochester, Rochester, NY, Apr 9, 2011.
- ✦ "Championing Scientific Careers", University of New Mexico-Los Alamos, Aug 3–4, 2010.
- ✦ LANSCE TA-53 Student Poster Session, Accelerator Operations and Technology Office, Los Alamos National Laboratory, Los Alamos, NM, Jul 27, 2010.

Quasielastic Neutron-Induced Deuteron Breakup.

- ✶ XXX Annual Rochester Symposium for Physics Students, University of Rochester, Rochester, NY, Apr 9, 2011.
- ✶ National Conference on Undergraduate Research, Ithaca College, Ithaca, NY, Mar 31 – Apr 2, 2011.
- ✦ Annual Fall Meeting Of The APS Division Of Nuclear Physics, Santa Fe, NM, Nov 2–6, 2010.
- ✦ XXIX Annual Rochester Symposium for Physics Students, University of Rochester, Rochester, NY, Apr 17, 2010.
- ✦ LANSCE TA-53 Student Poster Session, Accelerator Operations and Technology Office, Los Alamos National Laboratory, Los Alamos, NM, Aug 10, 2009.