

## Sara A. Pozzi

Department of Nuclear Engineering and Radiological Sciences  
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### EDUCATION

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- 2001 Ph.D., Science and Technology of Nuclear Plants, Polytechnic of Milan, Italy  
Thesis: *Fast Time-Correlation Measurements in Nuclear Safeguards*  
Marzio Marseguerra, advisor
- 1997 M.S. (Laurea), Nuclear Engineering, Polytechnic of Milan, Italy  
Thesis: *A Directional High Efficiency Monitor for Neutrons*  
Marzio Marseguerra, advisor

### PROFESSIONAL EXPERIENCE

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#### *Current Positions at University of Michigan*

- 2015 – present Professor w/tenure, Dept. of Nuclear Engineering and Radiological Sciences
- 2019 – present Founding Director, Consortium for Monitoring, Technology, and Verification (website <http://mtv.engin.umich.edu/>)
- 2018 – present Professor, Department of Physics
- 2018 – present Director, Diversity, Equity, and Inclusion, College of Engineering
- 2014 – 2020 Founding Director, Consortium for Verification Technology (website: <http://cvt.engin.umich.edu>)
- 2007 – present Founder and leader of the Detection for Nuclear Nonproliferation Group, (group website: <http://dnng.engin.umich.edu/>)

#### *Previous Positions at University of Michigan*

- 2010 – 2015 Associate Professor w/tenure, Department of Nuclear Engineering and Radiological Sciences
- 2007 – 2010 Associate Professor w/out tenure, Department of Nuclear Engineering and Radiological Sciences

#### *Positions at other institutions or organizations*

- 1 – 11/2007 Senior Research Staff, Oak Ridge National Laboratory
- 2006 – 2008 Adjunct Assistant Professor, University of Tennessee
- 2004 – 2006 Research Staff, Oak Ridge National Laboratory
- 2002 – 2004 Postdoctoral Research Associate, Oak Ridge National Laboratory
- 2001 – 2002 Postdoctoral Researcher, Polytechnic of Milan, Italy

### HONORS AND AWARDS

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- 2020 Fellow, Institute of Electrical and Electronics Engineers (IEEE)
- 2019 Cislser Lecture, Lawrence Technological University
- 2018 Fellow, Institute of Nuclear Materials Management

- 2018 Rackham Distinguished Mentor Award, University of Michigan
- 2017 Fellow, American Nuclear Society
- 2016 IEEE-NPSS Distinguished Lecturer
- 2016 Fall Ohanian Lecture, Herbert Wertheim College of Engineering, University of Florida
- 2016 Elsevier, Selected for Virtual Special Issue on Women in Physics
- 2012 Institute of Nuclear Materials Management, Edway R. Johnson Meritorious Service Award
- 2012 UM Nuclear Engineering and Radiological Sciences Department, Outstanding Achievement Award
- 2009 Institute of Nuclear Materials Management Central Region Chapter, Special Service Award
- 2006 Oak Ridge National Laboratory Early Career Award for Engineering Accomplishment
- 2006 Scientific and Technical Award, Oak Ridge National Laboratory, Nuclear Science and Technology Division
- 2006 Community Outreach Award, Oak Ridge National Laboratory, Nuclear Science and Technology Division
- 2006 Department of Energy, Office of Science, Outstanding Mentor Award
- 2005 Scientific and Technical Award, Oak Ridge National Laboratory, Nuclear Science and Technology Division
- 2005 Finalist (top 3) for the Oak Ridge National Laboratory Early Career Award for Engineering Accomplishment
- 2004 Certificate of Recognition; IEEE Nuclear and Plasma Sciences Society Radiation Instrumentation Early Career Award

#### **RESEARCH EXPERIENCE - SUMMARY**

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- Over 20 years of experience in research and development in the areas of nuclear engineering, nuclear nonproliferation and safeguards, and Monte Carlo methods development
- Founding Director of the Detection for Nuclear Nonproliferation Group, University of Michigan
  - Directs ~25 researchers including PhD students, postdoctoral scholars, and research scientists
- Impact:
  - Developed new techniques for neutron measurements that are being adopted by the International Atomic Energy Agency for safeguards monitoring of fresh nuclear fuel
  - Co-developed the MCNPX-PoliMi code, which is being used at over 50 institutions worldwide. The article that describes this code has over 375 citations
  - Authored or co-authored over 415 peer-reviewed journal publications and conference proceedings. H-index 33; i-10 index 120 (source: Google scholar accessed on 8/10/21)

- Graduated 24 PhDs as chair or co-chair
- Principal investigator of multiple research grants including project leadership in multidisciplinary proposals involving other top institutions, industry, and national laboratories
  - Developed and sustained a very successful and diversified research portfolio totaling approximately 65 M\$ since 2008, including two 25 M\$ university consortia (cvt.engin.umich.edu; mtv.engin.umich.edu).
- Extensive consulting experience for industry and national laboratories
  - Radiation Monitoring Devices, Y-12 National Security Complex

#### ADMINISTRATIVE LEADERSHIP EXPERIENCE - SUMMARY

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- **Founding Director** of the Consortium for Monitoring, Technology, and Verification (MTV) (14 universities and 11 national laboratories working together to develop new technologies needed for nuclear nonproliferation) 2019-present
  - Successfully competed for the MTV, funded by Department of Energy, NNSA
  - Directs the work of 29 faculty members and over 200 students engaged in multi-disciplinary research projects within the MTV
  - Promotes the activities of the MTV with sponsors and stakeholders
  - Funded at the level of 25 M\$ + 3 M\$ cost share over 5 years
- **Founding Director** of the Consortium for Verification Technology (CVT) (12 universities and 9 national laboratories working together to develop new technologies needed for nuclear treaty verification) 2014-2020
  - Successfully competed for the CVT, funded by Department of Energy, NNSA
  - Directs the work of 25 faculty members and over 200 students engaged in multi-disciplinary research projects within the CVT
  - Promotes the activities of the CVT with sponsors and stakeholders
  - Funded at the level of 25 M\$ + 1.5 M\$ cost share over 6 years
- **Impact:**
  - Trained and transitioned 60 PhD students and postdoctoral researchers to successful careers in academia, the national laboratories, industry, and government
  - Transitioned new technologies to industry, national laboratories, and government stakeholders
- **Director** (inaugural) of Diversity, Equity, and Inclusion (DEI) for the College of Engineering, UM
  - Lead the implementation of the College of Engineering 5-year strategic plan for DEI for students, faculty, and staff
  - Chair the Implementation Committee, consisting of 4 Associate Deans and several senior staff members
  - Chair the DEI Departmental Leads Committee, consisting of 14 DEI Department Leads

- Led the release of climate survey results for faculty and students of the College of Engineering
- Led the development and execution of a plan to improve the climate for all faculty
- Founded and maintained successful DEI Lecture Series for all
- Co-led the development of education programs for DEI for all at College of Engineering (students, faculty, and staff)
- Led faculty curriculum committee to develop mechanism for faculty development in DEI
- Coordinate and evaluate the impact of strategies and programs aimed at diversifying the faculty and students within the College of Engineering
- **Impact:**
  - 5 community team proposals for antiracism and broader DEI education have been developed, presented, and are ready to be approved.
  - 12 faculty DEI projects have been funded and are ongoing
  - DEI Lectures have been delivered to an audience of 100-200 Engineering members each, and have been recorded and placed on website for further reference
  - Climate survey and focus group results have been shared at the college and department level
- **Chair** of the Graduate Program, NERS (2013-2018)
  - Provided support/guidance to ~100 PhD students in the department
  - Initiated programs to diversify the graduate student population in NERS
  - Led the annual PhD recruiting process
  - Reported to Rackham (bi-annual meetings) and to College of Engineering (monthly meetings)
  - Met with graduate student committee and all graduate students twice per year
  - Reported to NERS faculty at faculty meetings (monthly meetings)
  - Addressed areas of concern to PhD students including climate and retention (ongoing)
- **Impact:**
  - PhD program selectivity increased from 36% in 2014 to 31% in 2018 and the yield (students accepting/students offered) increased from 53% to 73% in that same timeframe
  - Received recognition of a Rackham Merit Fellowship allocation
- Member, Board of Directors, Michigan Opera Theatre, major opera company in Michigan based in Detroit, MI

#### **PROFESSIONAL SERVICE EXPERIENCE - SUMMARY**

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- Editor for major journals in the field of nuclear engineering
  - **Executive editor** for Annals of Nuclear Energy (2017-present)

- **Guest editor** for Nuclear Instruments and Methods Section A (multiple years)
- **Guest editor** for Transactions of Nuclear Science (multiple years)
- Elected member of the **Administrative Committee** for the IEEE Nuclear and Plasma Sciences Society (2018-2022)
- Organized **major international conferences and program reviews**
  - IEEE Nuclear Science Symposium Co-Chair, Boston, 2020
  - IEEE Nuclear Science Symposium Co-Chair, Atlanta, 2017
  - University-Industry Technical Interchange (DOE-NNSA program review), 2018
- **National Laboratory external advisory board** member
  - Los Alamos National Laboratory
  - Brookhaven National Laboratory

## **PROFESSIONAL ACTIVITIES**

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### *Service at the Department Level*

- Member, Promotion Committee for an Associate Research Scientist to Research Scientist in the Department of Nuclear Engineering and Radiological Sciences 2020-2021
- Chair of the Graduate Program (Doctoral), Department of Nuclear Engineering and Radiological Sciences, 2013 – 2018
- Chair of the Promotion Committee for an Assistant Research Scientist in the Department of Nuclear Engineering and Radiological Sciences 2012-2013
- Member of the Faculty Search Committee for the Department of Nuclear Engineering and Radiological Sciences, 2012– 2016
- Member of the Graduate Program Committee for the Department of Nuclear Engineering and Radiological Sciences, 2012– 2013
- Member of the Chair Search Advisory Committee for the Department of Nuclear Engineering and Radiological Sciences, 2010
- Member of the Department of Nuclear Engineering and Radiological Sciences Executive Committee, 2008 – 2011
- Member of the Department of Nuclear Engineering and Radiological Sciences @ 50 Planning Committee, 2008
- Member of the Department of Nuclear Engineering and Radiological Sciences Committee for the Evaluation of the Candidacy Exam, 2010 – 2011

### *Service at the College of Engineering Level*

- Director of Diversity, Equity, and Inclusion (DEI), 2018-present
- Chair, DEI Implementation Committee, 2018-present
- Chair, DEI Faculty Curriculum Committee, 2020-2021
- Member, College of Engineering, Search Committee for Director of Culture, Community, and Equity, 2021
- Co-chair Mobility and Transportation Committee, 2018-2019
- Member, College of Engineering, Electrical Engineering and Computer Science Department, Review, 2019-2020

- Member, College of Engineering, Electrical Engineering and Computer Science Department, Committee for Promotion from Associate to Full Professor, 2019-2020
- Member, College of Engineering, Research scientist promotion committee, Department of Climate and Space Sciences, 2018-2019
- Member, College of Engineering Department Chair Search, Electrical and Computer Engineering, 2017-2018
- Member, College of Engineering Advance Advisory Board, 2015-2017
- Member, College of Engineering Research Advisory Committee, 2015-present
- Member, University of Michigan Advanced Research Computing Advisory Team, 2013-present
- Member, Faculty Committee on Discipline (College of Engineering), 2011 – 2015
- Member, Entrepreneurship Task Force (College of Engineering), 2011
- Member, University of Michigan College of Engineering, Dean’s Advisory Committee on Diversity, 2011 – 2012
- Member, Dean’s Advisory Committee on Female Faculty, 2013- 2015

***Service at the University Level***

- Member, STRIDE (Committee on Strategies and Tactics for Recruiting to Improve Diversity and Excellence), 2016-present
- Member, Rackham Review of Rackham Merit Fellowship Program 2020
- Member, Rackham Graduate Mentoring Award Committee, 2018-2020
- Member, Rackham Merit Fellowship Committee, 2017-2019
- Faculty Mentor for the Japan-US Advanced Collaborative Education Program, Nagoya University, 2013- present
- Member, Advisory Board Michigan Memorial Phoenix Project, 2012 – present
- Member, International Programs Committee (College of Engineering), 2011 – present
- Member, University of Michigan College of Engineering, Internal Task Force Meeting, 2012–present
- Marshall for the Graduations (ongoing)

***Professional Societies***

- Fellow, Institute of Nuclear Materials Management
- Fellow, American Nuclear Society
- Fellow, IEEE

***Conference Organizer***

- Program Chair, IEEE – Nuclear Science Symposium, Boston, MA, 2020
- Deputy Program Chair, IEEE – Nuclear Science Symposium, Atlanta, GA, 2017
- Associate Chair, Symposium on Radiation Measurements and Applications, Ann Arbor, MI, 2014, 2018

### ***Short Courses and Workshops Organized and Taught***

1. "Standoff Detection Techniques for Radiological and Nuclear Sources," IEEE Nuclear Science Symposium and Medical Imaging Conference, Dresden, Germany, October 24-25, 2008
2. "MCNP-PoliMi Training Workshop," 2010 American Nuclear Student Conference, University of Michigan, Ann Arbor, Michigan, April 9, 2010, enrollment: 30, workshop organizer
3. "MCNPX-PoliMi Training Workshop," University of Michigan, Ann Arbor, August 23-24, 2011, enrollment: 15, workshop organizer and primary lecturer
4. "2nd MCNPX-PoliMi Training Workshop," University of Michigan, Ann Arbor, July 25-26, 2012, enrollment: 15, workshop organizer and primary lecturer
5. "3<sup>rd</sup> MCNPX-PoliMi Training Workshop," University of Michigan, Ann Arbor, July 24-26, 2013, enrollment: 15, workshop organizer and primary lecturer
6. "Nuclear Technology: the Power and the Peril," University of Michigan, Ann Arbor, October 10, 2013 (co-organized with Ford School of Public Policy and INMM student chapter)
7. "4th MCNPX-PoliMi Training Workshop," University of Michigan, Ann Arbor, June 13, 2014, workshop organizer and primary lecturer
8. "MCNP Applications," IEEE/Nuclear Science Symposium Shortcourse, 2014, workshop organizer and primary lecturer
9. Consortium for Verification Technology ([cvt.engin.umich.edu](http://cvt.engin.umich.edu)) Kickoff Workshop, 10/2014, workshop organizer
10. "MCNPX-PoliMi Training Workshop," University of Michigan, Ann Arbor, June 2015, workshop organizer and lecturer
11. Consortium for Verification Technology ([cvt.engin.umich.edu](http://cvt.engin.umich.edu)) Workshop, 10/2015, workshop organizer
12. "Digital Pulse Shape Discrimination," IEEE/Nuclear Science Symposium Shortcourse Module, 2015, workshop lecturer
13. "MCNP/MCNPX-PoliMi Training Workshop," University of Michigan, Ann Arbor, 2016, workshop co-organizer
14. Consortium for Verification Technology Workshop, 10/2016, workshop organizer
15. "Digital Pulse Shape Discrimination," IEEE/Nuclear Science Symposium Shortcourse Module, 2017, workshop lecturer
16. Consortium for Verification Technology Workshop, 11/2017, workshop organizer
17. Consortium for Verification Technology Workshop, 10/2018, workshop organizer
18. Consortium for Monitoring, Technology, and Verification, 5/2019, workshop organizer
19. Consortium for Monitoring, Technology, and Verification, 3/2020, workshop organizer
20. Consortium for Monitoring, Technology, and Verification, 3/2021, workshop organizer

### ***Technical Program Committees***

- FIESTA Fission School and Workshop, Santa Fe, NM, September 18-22, 2017
- International Conference on Advancements in Nuclear Instrumentation Measurement Methods and their Applications, Liège, Belgium, June 19-23, 2017

- Symposium on Radiation Measurements and Applications, Ann Arbor, MI, 2014
- PHYSOR 2014, Track Leader for Track 13: Radiation Applications and Nuclear Safeguards, Kyoto, Japan, 2014
- IEEE Nuclear Science Symposium and Medical Imaging Conference, Anaheim, California, October 29 – November 3, 2012
- Advancements in Nuclear Instrumentation, Measurement Methods and their Applications (ANIMMA 2011)
- Symposium on Radiation Measurements and Applications, Ann Arbor, MI, 2010
- Advancements in Nuclear Instrumentation, Measurement Methods and their Applications (ANIMMA 2009)
- International Conference on Advances in Mathematics, Computational Methods, and Reactor Physics (M&C 2009)
- American Nuclear Society Sixth International Topical Meeting on Nuclear Plant Instrumentation, Control, and Human-Machine Interface Technologies (NPIC&HMIT 2009)
- PHYSOR 2008 Track No. 15: Radiation Applications & Nuclear Safeguards (2008)
- Member of the INMM Central Chapter Technical Program Committee (2007)
- Hold-up Measurement Workshop, Oak Ridge National Laboratory (ORNL) October 29 – November 3, 2006
- INMM Central Chapter Technical Program Committee (2005)
- ANS - Monte Carlo 2005 Technical Program Committee (2005)
- Membership Committee of the American Nuclear Society's Mathematics and Computation Division (2005)

### *Leadership Positions in Professional Organizations*

- Faculty advisor and founder of the first Institute of Nuclear Materials Management Student Chapter at the University of Michigan (2008 – present)
- Member, Honors and Awards Committee, IEEE/NPSS (2020-present)
- Chair of the Honors and Awards Committee of the Radiation Instrumentation Steering Committee of the IEEE Nuclear and Plasma Sciences Society (2007 – 2015)
- Member-at-Large of the Institute of Nuclear Materials Management (2010 – 2012)
- Chair of the Communications Committee of the Institute of Nuclear Materials Management (INMM) (2005 – 2010)
- Member of the Radiation Instrumentation Steering Committee of the IEEE Nuclear and Plasma Sciences Society (2005 – 2009)
- Member of the Students Activities Committee, Institute of Nuclear Materials Management (2005 – present)



- Member-at-Large of the Institute of Nuclear Materials Management Central Chapter (2004 – 2012)
- Editor of the INMM Communicator, online newsletter of the Institute of Nuclear Materials Management (2003 – 2008)
- Member of the Executive Committee of the American Nuclear Society's Mathematics and Computation Division (2006 – 2011)
- Head of the Student Activities Committee for the Central Chapter of the Institute of Nuclear Materials Management (2005 – 2010)

#### ***Working Groups***

- Department of Energy Global Nuclear Energy Partnership: Safeguards, 2008
- European Safeguards Association; Nondestructive Assay Working Group, 2009 – present
- European Safeguards Association; Novel Approaches / Novel Technologies, 2009 – present

#### ***National and International Advisory Services***

- Science of Signatures Review, Los Alamos National Laboratory, 2021
- Nonproliferation and National Security Advisory Committee, Brookhaven National Laboratory, Jan 2018-present
- Engineering Capability Review, Los Alamos National Laboratory, 2017
- Member, Scientific Program Advisory Committee (SPAC) for the Madison Accelerator Laboratory (MAL), 2017-present
- Reviewer for the Italian Evaluation of Research Quality Exercise (2012 – present)
- Member, Expert Advisory Group for the European Union FP7 project SCINTILLA (2011 – 2015)
- Independent Review member for the Department of Energy, National Nuclear Security Administration NA-22 projects (multiple times)

#### ***Session Chair (selected)***

- Institute of Nuclear Materials Management, virtual annual meeting, 2020
- IEEE Nuclear Science Symposium and Medical Imaging Conference, Sydney, Australia, 2018
- IEEE Nuclear Science Symposium and Medical Imaging Conference, Atlanta, GA, 2017
- IEEE Nuclear Science Symposium and Medical Imaging Conference, Strasbourg, France, 2016
- ANS Nuclear Nonproliferation Division Topical Meeting, Santa Fe, New Mexico, 2016.
- Institute of Nuclear Materials Management 57<sup>th</sup> annual meeting, Atlanta, Georgia, July 24-28, 2016
- IEEE Nuclear Science Symposium and Medical Imaging Conference, San Diego, California, November 2015

- Symposium on Radiation Measurements and Applications, Ann Arbor, June 2014
- IEEE Nuclear Science Symposium and Medical Imaging Conference, Seoul, Korea, November 2013
- IEEE Nuclear Science Symposium and Medical Imaging Conference, Anaheim, California, October 29 - November 3, 2012
- IEEE Nuclear Science Symposium and Medical Imaging, Knoxville, Tennessee, October 30 – November 6, 2010
- Institute of Nuclear Materials Management 51th Annual Meeting, Baltimore, Maryland, July 11–15, 2010
- IEEE Nuclear Science Symposium and Medical Imaging Conference, Orlando, Florida, October 25–31, 2009
- Institute of Nuclear Materials Management 50th Annual Meeting, Tucson, Arizona, July 12–16, 2009
- International Conference on Mathematics, Computational Methods & Reactor Physics (M&C 2009), Saratoga Springs, New York, May 3–7, 2009 (*session chair and session organizer*)
- IEEE Nuclear Science Symposium and Medical Imaging Conference, Dresden, Germany, October 19–25, 2008 (*session chair and session organizer*)
- 20th International Conference on the Application of Accelerators in Research and Industry (CAARI–2008), Fort Worth, Texas, August 10–15, 2008 (*session chair and session organizer*)
- Institute of Nuclear Materials Management 49th Annual Meeting, Nashville, Tennessee, July 13–17, 2008
- IEEE Nuclear Science Symposium and Medical Imaging Conference, Honolulu, Hawaii October 28–November 5, 2007
- Institute of Nuclear Materials Management Annual Meeting, Tucson, Arizona, July 8–12, 2007
- American Nuclear Society Annual Meeting, Boston, Massachusetts, June 24–28, 2007
- Joint International Topical Meeting on Mathematics & Computation and Supercomputing in Nuclear Applications (M&C+SNA 2007) Monterey, California, April 15–19, 2007, (*session chair and session organizer*)
- Nuclear Science Symposium, San Diego, California, October 29–November 3, 2006
- PHYSOR 2006, Vancouver, BC, Canada, September 10–14, 2006, (*session chair and session organizer*)
- INMM 46th Annual Meeting, Phoenix, Arizona, July 10–14, 2005
- Monte Carlo 2005 Topical Meeting, Chattanooga, Tennessee, April 17–21, 2005
- INMM Central Chapter Meeting, Oak Ridge, Tennessee, October 11–12, 2005
- INMM 45th Annual Meeting, Orlando, Florida, July 18–22, 2004

### *Referee Service*

- Referee for the scientific journals *IEEE Transactions on Nuclear Science*, *Nuclear Science and Engineering*, *Transport Theory and Statistical Physics*, *Nuclear Instruments and Methods in Physics Research A and B*, *Radiation Measurements*, *Journal of Applied Physics*, *Nature Communications*, ongoing
- Reviewer for the Department of Homeland Security, Academic Research Initiative, 2011.
- Reviewer for the Laboratory Directed Research and Development Program of Oak Ridge National Laboratory, 2007
- Reviewer for the U.S. Department of Energy NA-22 Proliferation Detection Program Broad Agency Announcement, 2011–present
- Reviewer for the Nuclear Energy University Program, U.S. Department of Energy office of Nuclear Energy (DOE-NE), 2010–present
- Reviewer for the U. S. Department of Energy, Small Business Innovation Research (SBIR) Small Business Technology Transfer (STTR), 2012
- Reviewer for the U. S. Department of Defense, Defense Threat Reduction Agency, Basic Research for Combating Weapons, 2012–present

#### ***Editorial Services***

- Executive Editor, *Annals of Nuclear Energy*, 12/2017-present
- Associate Editor, *Progress in Nuclear Energy* 2016-present
- Guest editor, *Nuclear Instruments and Methods A*, Proceedings of the 2014 Symposium on Radiation Measurements and Applications (SORMA)
- Associate Editor, SORMA West 2012 issue of the *IEEE Transactions on Nuclear Science*
- Guest editor, *Nuclear Instruments and Methods A*, Proceedings of the 2010 Symposium on Radiation Measurements and Applications (SORMA)

#### ***Media Interviews and Outreach Activities***

- Podcast, Partnering for Nuclear Nonproliferation, March 2018  
<http://engineering.oregonstate.edu/s5-e6-partnering-nuclear-nonproliferation>
- Saturday Morning Physics, University of Michigan, February 17, 2018 (~350 people)
- Reddit Ask Me Anything, Nuclear Science AMA, December 6, 2017  
<https://doi.org/10.15200/winn.151256.68244> (~800 views)
- Interview, RAI, Italian National Television, 2/2018 (audience ~millions of viewers)  
<http://www.stefanosalimbeni.com/2018/03/05/sara-pozzi-energia-pacifica-rai-italia/>
- Interview, SVP Productions, Beyond Productions, Melbourne, Australia, 8/2017 (audience ~millions of viewers)
- Channel News Asia Interview, 4/2016 (audience ~millions of viewers)
- MConnex – UM and Youtube video on Nuclear Engineering Laboratories, 2015
- Invited talk: “Detection for Nuclear Nonproliferation, November 30, 2015. Lecture to 60 undergraduate students
- Invited talk: “Research Methods in Engineering: Detection for Nuclear Nonproliferation”, November 4, 2014, Undergraduate Research Opportunity Program, University of Michigan. Lecture to 33 undergraduate students
- MConnex – UM video on North Korea Nuclear Tests, 2/2013

- MConnex – UM video on Detecting Nuclear Bombs in the Field, 2012

## TEACHING

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### *Courses Developed and Taught*

#### *Detection Techniques for Nuclear Nonproliferation, NERS 535*

The course introduces students to the science and technology associated with nuclear nonproliferation. The students gain a hands-on experience with radiation detectors and their application to nonproliferation. New course.

#### *Nuclear Safeguards, NERS 532*

The course covers the history of nuclear safeguards methods, international safeguards policy, and techniques and currently used neutron and gamma ray measurement systems in the areas of nuclear material safeguards. New course.

#### *Radiation Shielding Design, NERS 554*

The course covers the design process, characterization of radiation fields, radiation dose to biological Systems and electronics, radiation shielding design, regulatory constraints, secondary radiation generation, detector response functions, Monte Carlo tallies. Significantly revised course.

### *Students and Postdoctoral Researchers Advised*

#### *Chair for the following PhD students (year and present location):*

1. Eric Miller (2012, Johns Hopkins University), 2. Jennifer Dolan (2013, UM Medical Physics residency), 3. Mark Bourne (2015, Endectra), 4. Alexis Trahan (2015, Los Alamos National Laboratory), 5. Alexis Poitrasson-Riviere (2016, INVIA Medical Imaging Solutions), 6. Kyle Polack (2016, Sandia National Laboratories), 7. Bruce Pierson (2016, Pacific Northwest National Laboratory), 8. Marc Paff (2017, Los Alamos National Laboratory), 9. Michael Hamel (2017, Sandia National Laboratories), 10. Marc Ruch (2017, Los Alamos National Laboratory), 11. Mateusz Monterial (2017, Lawrence Livermore National Laboratory), 12. Mark Norsworthy (2017, Remote Sensing Laboratory, Nellis), 13. Charles Sosa (2018, Radiation Monitoring Devices), 14. Matthew Mar cath (2018, Los Alamos National Laboratory), 15. Ciara Sivels (2018, Johns Hopkins University), 16. Jennifer Arthur (2019, Los Alamos National Laboratory), 17. Cameron Miller (2019, Department of Homeland Security), 18. Tony Shin (2019, Los Alamos National Laboratory), Michael Hua (2021), 19. William Steinberger (2021), 20. Christopher Meert (2021), 21. Stefano Marin (2021), 22. Noora Ba Sunbul (2022), 23. Abbas Jinia (2022)

#### *Co-chair for the following PhD students (year and present location):*

1. Maura Monville (2005), 2. Shaun Clarke (2007, University of Michigan), 3. Andreas Enqvist (2010, University of Florida), 4. Shikha Prasad (2012, Texas A&M University), 5. Christopher Lawrence (2014, Georgetown University)

#### *M.S. students advised/co-advised (selected):*

Stefania Ramoni (2002), Jennifer Dolan (2009), Scott Ambers (2009), Ben Maestas (2009), Tomasz Zak (2009), William Walsh (2009), Mark Bourne (2010), Eric Miller (2010), Alexis Poitrasson-Rivière (2011), Jack Linkous (2012), Kyle Weinfurther (2012), Michael Hamel

(2012), Marc Paff (2012), Alicia Salazar (2014), Charles Sosa (2014), Steven Ward (2014), Tony Shin (2014), Athena Sagadevan (2016)

Committee member for the following PhD students:

Steven Anderson (2010), Adrienne Lehnert (2012), Jason Jaworski (2012), Yvan Boucher (2013), Steven Brown (2013), Sonal Joshi (2014), Mohammad Faisal (2014), Michael Febbraro (2014), Zachary Whetstone (2014), Alice Tomanin (2014), Joshua Mann (2016), Michael Streicher (2017), Luca Dioni (2017), David Moore (2017), Erik Fisher (2018), Natasha Sachdeva (2018), Joe Osborn (2018), Matthew Petryk (2022)

Undergraduate students (selected):

Mark Bourne, Kyle Weinfurther, Eleanor Pryser, Radha Argal, Catherine Mussi, Scott Ambers, Chad Gibson, Tony Shin, William Walsh, Alexis Poitrasson-Riviere, Lu Huang, Paul Stanfield, Ben Dennis, Amy Meldrum, Brett Hamel, Victoria Bracht, Lauren D’Cruz, Joseph Cho, Jeremy Ross, Matthew O’Callaghan, Alex Marmorale, Dietrich Klem, Jeffrey Whaley, Nick Adamowicz, Alex McSpaden, Tyler Jordan, Emily King, Kyle Beyer

Research staff supported and mentored (current position):

Dr. Shaun Clarke, Associate Research Scientist, Dr. Patricia Schuster, UM President’s Postdoctoral Fellow, Dr. Mark Bourne, Postdoctoral Fellow (Endectra, LLC), Dr. Marc Paff, Postdoctoral Fellow (LANL), Dr. Lazar Supic, Postdoctoral Fellow, Dr. Angela Di Fulvio Assistant Research Scientist (Assistant Professor, University of Illinois), Dr. Marek Flaska, Associate Research Scientist (Assistant Professor, Penn State University), Dr. Andreas Enqvist, Assistant Research Scientist (Assistant Professor, University of Florida), Dr. Syed Naeem, Postdoctoral Fellow (Chalmers University)

## **FUNDED RESEARCH PROJECTS**

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### ***Past Projects***

1. Neutron Rodeo, Department of Energy, NNSA, 12/1/17-8/31/18, PI: Sara Pozzi, \$125,000 (Pozzi share: \$125,000)
2. Physics of Fission, Department of Energy, NNSA, 9/1/2016-8/31/2019, PI: Patrick Talou, LANL (Pozzi share: 450,000 \$)
3. Dual Particle Imager, DOE-NNSA NA-22, 10/2014-10/2017, \$750,000 PI: Sara Pozzi; co-PIs Marek Flaska, Shaun Clarke (UM) (Pozzi share \$750,000)
4. Developing Accurate Simulations of Correlated Data in Fission Events, DOE-NNSA NA-22, 10/2013-3/2017, \$280,000 UM-PI: Sara Pozzi, PI: Patrick Talou, LANL (Pozzi share \$280,000)
5. Compact Source of Laser-Driven Monoenergetic Gamma-Rays, Department of Defense, Defense Threat Reduction Agency, 9/30/13 – 5/13/14, \$178,229, UM PI: Sara Pozzi, PI: Donald Umstadter (University of Nebraska) (Pozzi share \$178,229)
6. IFind Mobile Detection System, FLIR, DOD/DTRA, 2/12 – 5/13, \$204,918 UM PI: Sara Pozzi

7. Liquid Scintillator Multiplicity Counter, DOE NNSA, 12/09/2011 – 9/30/2013, \$ 200,000 UM-PI: Sara Pozzi, PI: David Chichester (Idaho National Laboratory)
8. Epithermal- and Fast-Neutron Detection System for Active- and Passive-Measurement Applications for National Security and Nuclear Energy, DOE Office of Science, 11/11 – 11/13, \$ 188,000, PI: Sara Pozzi
9. Basic Physics Data: Improved Fission Neutron Multiplicity, DOE NEUP, 9/2011 – 9/2014, \$954,000, PI: Sara Pozzi, Co-PI Robert Haight, LANL (Pozzi share \$750,000)
10. Energy-Angle Correlation in Spontaneous-and Induced-Fission Neutron Emissions, DOE NA-22, 6/11 – 6/14, \$900,000, PI: Sara Pozzi, Co-PI: Robert Haight, LANL (Pozzi share \$720,000)
11. IFind Mobile Detection System, ICX, DOD/DTRA, 3/11 – 2/12, \$110,000 UM PI: Sara Pozzi
12. Neutron Interrogation for Fuel Cycle Measurements, Department of Energy, NNSA NA 243, 1/11 – 9/11, \$ 101,276, UM PI: Sara Pozzi, PI: David Chichester (Idaho National Laboratory)
13. Digital Fast Neutron Detection System for Simultaneous Time Correlation and Spectrometry, DOE NA-22, 11/10 – 9/13, \$ 360,818 UM-PI: Sara Pozzi, PI: John Mattingly/Peter Marleau, SNL
14. New University of Michigan Laboratory for Research and Teaching in Nuclear Nonproliferation, 9/1/10 – 8/31/11, \$ 160,000 PI: Sara Pozzi
15. Digital Waveform Sampling of Neutron and Gamma Ray Signals from Scintillators, Stewardship Science Academic Alliances Program, DOE- NNSA, 2/10/ – 2/14, \$490,000 PI: Sara Pozzi
16. Improved Fission Neutron Data Base for Active Interrogation of Actinides, DOE NE- UP, 10/09 – 9/13, \$690,000 PI: Sara Pozzi
17. IFind Mobile Detection System, ICX, DOD/DTRA, 5/09 – 5/11, \$122,000 UM PI: Sara Pozzi
18. A Multisensor Fusion Approach to the Solution of Inverse Radiation Transport Problems, DOE - NA 22, 12/08 – 11/11, \$260,000 UM PI: Sara Pozzi, PI: John Mattingly (Sandia National Laboratories)
19. Measurement and Characterization of Nuclear Material at Idaho National Laboratory, DOE - NA 243, 11/08 – 10/09, \$75,000 UM PI: Sara Pozzi, PI: David Chichester (Idaho National Laboratory)
20. Faculty Development Grant, NRC, 8/08 – 7/11, \$ 300,000 PI: William Martin Co-PIs: Sara Pozzi, Michael Hartman
21. Characterization of the Capture-Gated Liquid Scintillator BC- 523, DOE/Euratom, 7/08 – 12/09, \$68,000 UM PI: Sara Pozzi, PI: Ana Raffo-Caiado (Oak Ridge National Laboratory)
22. Extensive Testing of the TORO Pileup Recovery Technology at the University of Michigan, Southern Innovation, 6/08 – 12/08, \$60,000 PI: Sara Pozzi
23. Monte Carlo Simulations for Tunable, Mono-energetic Gamma ray Source for Detection of Embedded SNM, DNDO, 1/08 – 10/10, \$266,000 UM PI: Sara Pozzi, PI: Donald Umstadter (University of Nebraska)
24. New Detectors, Electronics, and Algorithms for Fast Neutron Spectroscopy in a Scalable Measurement Platform, Academic Research Initiative (National Science Foundation and

- Department of Homeland Security), 10/09 – 9/15, \$ 2,000,000 PI: Sara Pozzi, Co PI's: Fred Becchetti (UM), David Wentzloff (UM), and Larry Rees (BYU) (Pozzi share \$1,000,000)
25. Development of a New Graduate Level Course in Nuclear Safeguards at the UM NERS Department, 7/30/09 – 12/31/15, \$ 224,236 PI: Sara Pozzi (Pozzi share \$224,236)
  26. Neutron Detection for Cancer Therapy, MCubed, 4/2013-4/2014, Cube proposed by PI Sara A. Pozzi, co-PI's Jamie Phillips EECS and Thomas Schwarz physics, \$ 60,000 (Pozzi share \$20,000)
  27. Low Dose Tomographic System Based on a Novel Narrowband, Tunable, Multi-meV X-Ray Source, 9/30/13 – 3/31/15, \$190,000, National Strategic Research Institute, University of Nebraska, UM-PI: Sara Pozzi, PI: Donald Umstadter (Pozzi share: \$190,000)
  28. Advanced Plastic Scintillators for Nuclear Non-proliferation Monitoring, Department of Energy, Radiation Monitoring Devices, Inc., \$129,962, 8/14/2013-7/13/2015 UM-PI: Sara Pozzi, PI: Kanai Singh (RMD) (Pozzi share \$129,962)
  29. Sandia Fellowship, Kyle Polack, 8/1/2013 to 7/31/2015, PI Sara Pozzi, \$ 80,000 (Pozzi share \$80,000)



### ***Current Grants and Contracts***

1. Consortium for Monitoring, Technology, and Verification, Department of Energy: NNSA, NA-22, total Award Period Covered: 9/19-9/24, Overall PI: Sara Pozzi, \$25,000,000, Location of project: Michigan and 13 other academic institutions
2. Consortium for Verification Technology, Department of Energy: NNSA, NA-22, Total Award Period Covered: 9/14 – 9/20, Overall PI: Sara Pozzi, \$25,000,000, Location of Project: Michigan and 11 other academic institutions (Pozzi share \$2,500,000)
3. Handheld Dual Particle Imager, Department of Defense, Defense Threat Reduction Agency, \$1,000,000 3/1/2017-2/28/2021 PI: Sara Pozzi
4. Fast Neutron Detection for Active Interrogation, Department of Homeland Security, Domestic Nuclear Detection Office, Academic research Initiative, 9/1/2016-8/31/2021, 1,750,000 \$ PI: Sara Pozzi, co-PI David Wentzloff (UM)

### **INVITED PRESENTATIONS**

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1. Invited Talk, George Washington University, Nuclear Science and Security Bootcamp, “Monitoring and Detection”, June 2021
2. Invited Talk and Panel, SORMA 2021, “Consortium for Monitoring, Technology, and Verification”, May 2021
3. Invited Talk, WANDA (Workshop for Applied Nuclear Data Activities), “Nuclear Fission Experiments at UM”, January 27, 2021
4. Invited Talk, Chair’s Distinguished Seminar Series, Aerospace Engineering, University of Michigan, “Diversity, Equity, and Inclusion in Engineering,” January 21, 2021
5. Invited Talk, National Academies of Sciences, Engineering, and Medicine, Review of Capabilities for Detection, Verification, and Monitoring of Nuclear Weapons and Fissile Material, “Consortium for Verification Technology and Consortium for Monitoring, Technology, and Verification”, October 16, 2020
6. Invited Talk, Idaho National Laboratory MeV Summer School, “Experimental and Modeling Methods for Nuclear Nonproliferation”, virtual presentation, August 5, 2020
7. Invited Talk, Argonne National Laboratory, “Science and Technology for Nuclear Treaty Verification”, virtual presentation, July 31, 2020
8. Invited Seminar, “Introduction to Nuclear Nonproliferation”, Consortium for Monitoring, Technology, and Verification, Nuclear Engineering Summer School, virtual event, May 2020
9. Invited Talk: NERS 211: Introduction to Nuclear Engineering and Radiological Sciences, “Introduction to Nuclear Nonproliferation and Safeguards”, University of Michigan, April 8, 2020
10. Invited Talk: NERS 290: Special Topics for Nuclear Engineering and Radiological Sciences, " Nuclear Measurements for Nonproliferation ", University of Michigan, February 11, 2020
11. Invited Talk “NNSA Consortia Research Activities in Nuclear Nonproliferation at University of Michigan,” University of Michigan, February 2020
12. Invited Talk: PubPol 754: Research Seminar in Science, Tech and Public Policy, “Physics of Nuclear Nonproliferation” University of Michigan, January 29, 2020

13. Invited Talk, "Radiation Detection", IEEE Nuclear Science Symposium, Manchester, UK, November 2019
14. Invited Panel, "Diversity, Equity and Inclusion at GT, UC Berkeley, and Michigan" NextProf Nexus, Atlanta, GA, October 2019
15. Invited Seminar, "University Consortia for Nuclear Nonproliferation Research," KAIST, Korea, August 2019
16. Invited Talk and Panel, "Consortium for Verification Technology," NEREC, Seoul, Korea, August 2019
17. Invited Seminar, Michigan State University, "Recent Accomplishments and Open Challenges in Nuclear Nonproliferation," April 2019
18. Invited Seminar, "Physics of Nonproliferation," Public Policy 734, University of Michigan, March 2019
19. Invited Seminar, 2019 Cisler Lecture, Lawrence Technological University, February 2019
20. Invited Seminar, "Science and Technology for Nuclear Nonproliferation", Albion College, November 2018
21. Invited Talk and Panel, "Excellence and Diversity," IEEE Nuclear Science Symposium, Sydney, Australia, November 2018
22. Invited Talk, "Detectors and Algorithms for Active Interrogation," CAARI 2018 conference, Grapevine, Texas, August 2018
23. Invited Seminar, "Neutron Detection for Nonproliferation Applications," Summer School on Neutron Detectors and Related Applications (NDRA-2018), Riva Del Garda, Trento, Italy, July 2018
24. Invited Talk, "Detection for Nonproliferation," Saturday Morning Physics, Department of Physics, University of Michigan, February 2018
25. Invited Seminar, "Science and Technology for Nuclear Nonproliferation," Georgia Institute of Technology, Atlanta, GA, February 2018
26. Invited Seminar, "Neutron Detection in Proton Therapy for Cancer Treatment," IEEE Distinguished Lecture, University of Trento, Italy, December 2017
27. Invited Seminar, "Radiation Detection for Treaty Verification," Pacific Northwest National Laboratory, September 2017
28. Invited Seminar, "Consortium for Verification Technology Research Activities," IEEE Distinguished Lecture, Pacific Northwest National Laboratory, September 2017
29. Invited Talk, "Consortium for Verification Technology," Institute of Nuclear Materials Management (INMM) Nonproliferation and Arms Control Division Meeting, Indian Wells, CA, July 16-20, 2017
30. Invited Talk, "Consortium for Verification Technology Research Activities," 10<sup>th</sup> International Topical Meeting on Industrial Radiation and Radioisotope Measurement Applications (IRRMA-X), Chicago, IL, July 9-13, 2017
31. Invited Talk, "Establishing and Advancing Nonproliferation and Nuclear Policy Education at U.S. Science and Engineering Programs," American Nuclear Society Annual Meeting, San Francisco, CA, June 2017

32. Invited Talk, "Stochastic Models for Fast Neutron Multiplicity Counting of Plutonium," American Nuclear Society Mathematics and Computations Division, Jeju Island, Korea, April 2017
33. Invited Talk, "Consortium for Verification Technology", Defense Nuclear Nonproliferation's Nonproliferation Research and Development (DNN R&D), Washington DC, March 28 - 29, 2017
34. Invited Seminar, 2016 Fall Ohanian Lecture, "Science and Technology for Nuclear Treaty Verification," Herbert Wertheim College of Engineering, University of Florida November 2016
35. Invited Talk, "Detectors for Active Interrogation Applications," 24th International Conference on the Application of Accelerators in Research and Industry, Ft. Worth, TX, USA, Oct. 30 – Nov. 4, 2016. Presented by Shaun D. Clarke
36. Invited Panel Member, "Consortium for Verification Technology," American Nuclear Society, Nuclear Nonproliferation Conference, Santa Fe, NM, September 2016
37. Invited Talk, "From Nuclear Engineering to Homeland Security," COE Advancement, Napa Valley, CA, May 20, 2016
38. Invited Talk, "Measurement of Neutrons in Proton Therapy Applications," Italian Technological Excellence in the U. S., Detroit, MI, May 10, 2016
39. Invited Talk, "Consortium for Verification Technology," University of Michigan, College of Engineering Meeting, Ann Arbor MI, April 2016
40. Invited Seminar, "New Instruments for Safeguards and Nonproliferation," Purdue University, West Lafayette IN, March 2016
41. Invited Talk, "Passive and Active Experiments for Nonproliferation," Rapiscan, Sunnyvale CA, February 11, 2016
42. Invited Talk, "Consortium for Verification Technology," University of Michigan, Knight-Wallace Journalism Fellows, February 2, 2016
43. Invited Talk, "Detection for Nuclear Nonproliferation," International Symposium on Radiation Detection 2016, KEK Tsukuba, Japan, January 20, 2016
44. Invited Seminar, "Applied Nuclear Physics for Nuclear Nonproliferation," Duke University, November 19, 2015
45. Invited Talk, American Nuclear Society Winter Meeting, Panel on University Consortia, Washington DC, November 10, 2015
46. Invited Talk, American Nuclear Society Winter Meeting, Panel on Nuclear Data, Washington DC, November 10, 2015
47. Invited Seminar, "Measurement and Simulation of Secondary Neutron Production during Proton Therapy," OncoRay, Dresden, Germany, April 27, 2015
48. Invited Seminar, "Consortium for Verification Technology," Columbia University, New York, March 11, 2015
49. Invited Seminar, "Measurement and Simulation of Secondary Neutron Production from High-Energy Proton and Photon Beams," University of Michigan Hospital, Ann Arbor, 24 Feb 2015
50. Invited Seminar, "Scintillators for Nuclear Nonproliferation and Nuclear Physics Applications," Lawrence Berkeley National Laboratory, February 3, 2015

51. Invited Seminar, "Consortium for Verification Technology," University of California, Berkeley, February 2, 2015
52. Invited Seminar, "Detection and Characterization of Special Nuclear Material," Polytechnic of Milan, Italy, February 26, 2014
53. Invited Talk, "Neutron Detection for Cancer Therapy," MCUBED Symposium, University of Michigan, November 15, 2013
54. Invited Talk, "Detection Techniques to Counter Nuclear and Radiological Threats," SCINTILLA Workshop (international), Budapest, Hungary, September 2013
55. Invited Talk, "Detection using the New Plastic Scintillator EJ-299-33", Defense Threat Reduction Agency, August 22, 2013
56. Invited Talk, "Fast Neutron Detection with Scintillators for Nuclear Safeguards," He-3 Alternatives Workshop, Los Alamos National Laboratory, June 26, 2013
57. Invited Talk, "Energy-Angle Correlations in Spontaneous-and Induced Fission Neutron Emissions," Department of Energy, University Industry Technical Interface, Lansing, MI, June 6, 2013
58. Invited Seminar, "Protecting our Nation from Nuclear Threats," University of Michigan, Department of Physics, January 29, 2013
59. Invited Seminar, "Detection of Correlated Particles from Fission for Nuclear Safeguards and Nonproliferation," University of Wisconsin, December 11, 2012
60. Invited Talk, "Fast Neutron Spectroscopy," American Nuclear Society Annual Meeting, Chicago, IL, June 26, 2012. (Presented by student: Mark Norsworthy)
61. Invited Seminar, "Measurements and Simulations for Nuclear Safeguards and Nonproliferation," Siemens, Knoxville, TN, June 14, 2012
62. Invited Talk, "Photo-fission Signatures for the Detection of Highly Enriched Uranium," SPIE Defense, Security, and Sensing, Baltimore, Maryland, April 23-27, 2012
63. Invited Panel Member – Embedding Nuclear Security Concepts in the Nuclear Engineering Curriculum, PHYSOR 2012 – Advances in Reactor Physics – Linking Research, Industry, and Education Knoxville, Tennessee, April 15-20, 2012
64. Invited Seminar, "Recent Advances in Detection Techniques for Nuclear Safeguards and Nonproliferation," The University of Michigan, Ann Arbor, MI, March 23, 2012
65. Invited Seminar, "Recent Advances in Detection Techniques for Nuclear Safeguards and Nonproliferation," The Pennsylvania State University, State College, PA, March 15, 2012
66. Invited Seminar, "Introduction to MCNPX-PoliMi," Oak Ridge National Laboratory, November 10, 2011
67. Invited Talk, "Nuclear Nonproliferation and Safeguards Education Program at the University of Michigan," American Nuclear Society Annual Meeting, November 3, 2011
68. Invited Seminar, "Detection of Fast Neutrons for Nuclear Safeguards and Nonproliferation Applications," Pacific Northwest National Laboratory, June 14, 2011
69. Invited Keynote Talk, "Fast Neutron Detection for Nonproliferation Applications," European Safeguards Research and Development Association (ESARDA), Novel Techniques and Novel Approaches Working Group, Budapest, Hungary, May 20, 2011
70. Invited Talk, "Digital Waveform Sampling of Neutron and Gamma Ray Signals from Scintillation Detectors for Pulse Shape Discrimination and Pulse Height Analysis,"

Stewardship Science Academic Alliances Symposium, Washington D.C., February 15 – 17, 2011

71. Invited Seminar, "Overview of Research Activities in the Detection for Nuclear Nonproliferation Group", Rapiscan Laboratories, Sunnyvale, CA, October 22, 2010
72. Invited Seminar, "Detection Techniques for Nuclear Safeguards and Nonproliferation Applications", Oak Ridge National Laboratory, Oak Ridge, TN, August 2, 2010
73. Invited Talk, "Advances in Fast Neutron Detection using Organic Scintillators," European Safeguards Research and Development Association 32nd Annual Meeting, Luxembourg, May 4-6, 2010
74. Invited Seminar, "Detectors, Electronics, and Algorithms for Nuclear Nonproliferation, Safeguards, and Homeland Security Applications," Los Alamos National Laboratory, April 22, 2010
75. Invited Seminar, "Passive and Active Interrogation of Special Nuclear Material," Johns Hopkins University Applied Physics Laboratory, March 16, 2010
76. Invited Seminar, "Grand Challenges in Nuclear Nonproliferation and Safeguards and Ongoing Programs at the University of Michigan," Chalmers University of Technology, Gotenburg, Sweden, February 25, 2010
77. Invited Talk, "University of Michigan Curriculum in Nuclear Nonproliferation and Safeguards," University of Missouri, Institute for Nuclear Materials Management Workshop, February 9-12, 2010 (presented by student J. L. Dolan)
78. Invited Seminar, "Technical Challenges and Recent Advances in Nuclear Nonproliferation and Safeguards Applications," American Nuclear Society, Michigan Section, September 24, 2009
79. Invited Talk, "University of Michigan Curriculum in Nuclear Nonproliferation and Safeguards," LANL/TAMU NGS Human Capital Development Workshop, Los Alamos National Laboratory, Santa Fe, New Mexico, August 10, 2009
80. Invited Talk, "Fast Neutron Spectrum Unfolding for Nuclear Nonproliferation and Safeguards Applications," International Conference on Transport Theory, Torino, Italy, July 17, 2009
81. Invited Seminar, "Measurement and Analysis Systems for Nuclear Nonproliferation, Safeguards, and Homeland Security Applications," University of Michigan Colloquium, March 20, 2009
82. Invited Talk, "Recent Advances and Upcoming Challenges in Nuclear Nonproliferation, Safeguards, and the Prevention of Nuclear Terrorism," Workshop "A New Model for U.S.-Russian Nonproliferation and Antiterrorism Cooperation," Moscow Engineering Physics Institute, Moscow, Russia, December 15-16, 2008
83. Invited Seminar, "Women in Nuclear: Continuing the Heritage," Women in Nuclear – Swedish Branch – Annual Meeting Ringhals, Sweden, November 13-14, 2008
84. Invited Seminar, "The Discovery of Fission to Today's Nuclear Engineering Challenges," Women in Science and Engineering Residence Program, University of Michigan, November 4, 2008

85. Invited Seminar, "From the Discovery of Nuclear Fission to Today's Challenges in Nuclear Energy and Nonproliferation," Women in Engineering, IEEE Nuclear Science Symposium and Medical Imaging Conference, Dresden, Germany, October 19-25, 2008
86. Invited Talk, "Recent Developments in Fast Neutron Detection and Spectroscopy," Global Nuclear Energy Partnership: Safeguards Working Group, Washington, D.C., June 17, 2008
87. Invited Seminar, "Modeling and Experiments for Nuclear Nonproliferation Applications," Chalmers University of Technology, Gotenburg, Sweden, March 6, 2008
88. Invited Seminar, "Special Nuclear Material Detection and Characterization: Modeling Tools and Validation Experiments," SKI (Swedish Nuclear Regulatory Authority), Stockholm, Sweden, March 7, 2008
89. Invited Seminar, "New Detection Techniques for Special Nuclear Material: from Modeling and Simulations to Experiments and Validation," Lawrence Berkeley National Laboratory, April 20, 2007
90. Invited Seminar, "New Detection Techniques for Special Nuclear Material: from Modeling and Simulations to Experiments and Validation," Department of Chemical and Nuclear Engineering, University of New Mexico, April 12, 2007
91. Invited Seminar, "Neutron Slowing Down and Detector Response: Organic Scintillators," Department of Nuclear Engineering, The University of California, Berkeley, February 13, 2007
92. Invited Seminar, "Novel Active Interrogation Techniques for the Detection of Special Nuclear Material," Lawrence Berkeley National Laboratory, February 9, 2007
93. Invited Seminar, "Recent Developments in Monte Carlo Methods for Nuclear Nonproliferation and Homeland Security Applications", Department of Chemical and Nuclear Engineering, University of New Mexico, Albuquerque, December 4, 2006
94. Invited Seminar, "Active Interrogation by Photofission for Nuclear Nonproliferation and Homeland Security Applications," Lawrence Livermore National Laboratory, October 27, 2006
95. Invited Seminar, "Recent Developments in Monte Carlo Methods for Nuclear Nonproliferation and Homeland Security Applications", Department of Nuclear Engineering, The University of California, Berkeley, October 26, 2006
96. Invited Seminar, "Recent Developments in Monte Carlo Methods for Nuclear Nonproliferation and Homeland Security Applications," The Pennsylvania State University, State College, PA, October 5, 2006
97. Invited Seminar, "Monte Carlo Simulation of Correlation Measurements of Photon Interrogation of Fissile Material," Idaho Accelerator Center, Idaho State University, Pocatello, ID, July, 2006
98. Invited Talk, "Nuclear Materials Identification by Photon Interrogation," Monte Carlo 2005, September 12-15, 2005, Avignon, France
99. Invited Seminar, "Developments of Monte Carlo simulation capabilities", ORNL – All-Russia Scientific Research Institute of Experimental Physics (VNIIEF) - All-Russia Scientific Research Institute of Automatics (VNIIA) Workshop, June, 2005
100. Invited Seminar, "NMIS Measurements on Plutonium Oxide Samples at the EURATOM Laboratory JRC-Ispra, Italy," ORNL – All-Russia Scientific Research Institute

- of Experimental Physics (VNIIEF) - All-Russia Scientific Research Institute of Automatics (VNIIA) Workshop, June, 2005
101. Invited Seminar, "Monte Carlo Modeling for the Characterization of Nuclear Materials", International Meeting on Reactor Noise (IMORN) 29, May 17-19, 2004, Budapest, Hungary
  102. Invited Seminar, "Simulation of Experiments Based on Photonuclear Interrogation," ORNL – All-Russia Scientific Research Institute of Experimental Physics (VNIIEF) - All-Russia Scientific Research Institute of Automatics (VNIIA) Workshop, June, 2005
  103. Invited Seminar, "Characterization of Organic Scintillators for the Detection of Nuclear Materials," Joint Research Center, European Commission, Geel, Belgium, October 27, 2004
  104. Invited Seminar, Presentation of the MCNP-PoliMi code at the ORNL – All-Russia Scientific Research Institute of Experimental Physics (VNIIEF) - All-Russia Scientific Research Institute of Automatics (VNIIA) Workshop, February, 2003
  105. Invited Seminar, Presentation of the MCNP-PoliMi code at the Oak Ridge National Laboratory, Oak Ridge, Tennessee, July 2001

## PUBLICATIONS

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### *Journal Publications*

1. Nathan P. Giha, William M. Steinberger, Lucas Q. Nguyen, Joseph S. Carlson, Patrick L. Feng, Shaun D. Clarke, Sara A. Pozzi, "Organic glass scintillator bars with dual-ended readout", *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, Volume 1014, 2021.
2. Stefano Marin, M. Stephan Okar, Eoin P. Sansevero, Isabel E. Hernandez, Catherine A. Ballard, Ramona Vogt, Jürgen Randrup, Patrick Talou, Amy E. Lovell, Ionel Stetcu, Olivier Serot, Olivier Litaize, Abdelhazize Chebboubi, Shaun D. Clarke, Vladimir A. Protopopescu, and Sara A. Pozzi "Energy-Dependent Event-by-Event Correlations in Neutron Emission of  $^{252}\text{Cf(sf)}$ ", *Physical Review C*, Vol 104, 024602, 2021.
3. W. M. Steinberger, N. P. Giha, M. Hua, S. D. Clarke, S. A. Pozzi, "Anisotropic neutron response of trans-stilbene and impact on a handheld dual particle imager", *Nuclear Instruments and Methods in Physics Research Section A*, vol 1003, 165266, 2021.
4. N. Ba Sunbul, I. Oraiqat, B. Rosen, C. Miller, C. Meert, M. Matuszak, S. Clark, S. Pozzi, J. Moran, I. El Naqa, "Application of Radiochromic Gel Dosimetry to Commissioning of a Megavoltage Research Linear Accelerator for Small-Field Animal Irradiation Studies", *Medical Physics*, vol. 48, 3, pp. 1404-1416, 2021.
5. M.Y. Hua, J.D. Hutchinson, G.E. McKenzie, S.D. Clarke, S.A. Pozzi, "On the Feynman-alpha Method for Reflected Fissile Assemblies," *Annals of Nuclear Energy*, vol. 155,
6. N. A. Kleedtke, M. Y. Hua, and S. A. Pozzi, "Genetic algorithm optimization of tin-copper graded shielding for improved plutonium safeguards measurements," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 988, 164877, 2021.
7. J. Zhou, A. Di Fulvio, K. Beyer, M. Ferrarini, M. Pullia, M. Donetti, S. D. Clarke and S. A. Pozzi, "Angular distribution of neutron production by proton and carbon-ion therapeutic beams," *Physics in Medicine & Biology*, vol. 65, 155002, 2020.
8. M.Y. Hua, F.B. Darby, J.D. Hutchinson, G.E. McKenzie, S.D. Clarke, S.A. Pozzi, "Validation of the Two-Region Rossi-alpha Model for Reflected Assemblies," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 981, 164535, 2020. <https://doi.org/10.1016/j.nima.2020.164535>
9. M.Y. Hua, J.D. Hutchinson, G.E. McKenzie, B.C. Kiedrowski, M.W. Liemohn, S.D. Clarke, S.A. Pozzi, "Measurement Uncertainty of Rossi-alpha Neutron Experiments," *Annals of Nuclear Energy*, vol. 147, 107672, 2020.
10. A. J. Jinia, N. B. Sunbul, C. A. Meert, C. A. Miller, S. D. Clarke, K. J. Kearfott, M. M. Matuszak, S. A. Pozzi, "Review of Sterilization Techniques for Medical and Personal Protective Equipment Contaminated With SARS-CoV-2" *IEEE Access*, vol. 8, pp. 111347-111354, 2020, 10.1109/ACCESS.2020.3002886.



11. M. Y. Hua, C.A. Bravo, A.T. MacDonald, J.D. Hutchinson, G.E. McKenzie, B.C. Kiedrowski, S.D. Clarke, S.A. Pozzi, "Rossi-alpha measurements of fast plutonium metal assemblies using organic scintillators," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 959, 163507, 2020.
12. Y. Altmann, A. Di Fulvio, M. G. Paff, S. D. Clarke, M. E. Davies, S. McLaughlin, A. O. Hero, and S. A. Pozzi, "Expectation propagation for weak radionuclide identification at radiation portal monitors," *Nature Scientific Reports*, vol. 10, 6811, 2020.
13. S. Marin, V. A. Protopopescu, R. Vogt, M. J. Marcath, S. Okar, M. Y. Hua, P. Talou, P. F. Schuster, S. D. Clarke, S. A. Pozzi. "Event-by-event neutron-photon multiplicity correlations in  $^{252}\text{Cf}(\text{sf})$ ." *Nuclear Instruments and Methods in Physics Research Section A*, vol. 968, 163907, 2020.
14. C. A. Miller, F. Odeh, M. Mamtimin, W. Peters, S.D. Clarke, S.A. Pozzi "Actively Interrogated Dieaway Measurements of a Subcritical Assembly," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 959, 163598, 2020.
15. W. M. Steinberger, M. L. Ruch, N. P. Giha, A. Di Fulvio, P. Marleau, S. D. Clarke, S. A. Pozzi, "Imaging of Special Nuclear Material Using a Handheld Dual Particle Imager," *Sci Rep* 10, 1855 (2020).
16. U. Shirwadkar, E. van Loef, G. Markosyan, J. Tower, M. Spens, C. Ji, L. S. Pandian, A. Gueorguiev, J. Glodo, K. Shah, S. A. Pozzi, S. D. Clarke, W. Langeveld, D. Strellis, J. Garcia, "Low-cost, multi-mode detector solutions", *Nuclear Instruments and Methods in Physics Research Section A*, vol. 954, 161289, 2020.
17. C. A. Miller, C.G.R. Geddes, S.D. Clarke, S.A. Pozzi "Shielding a monoenergetic photon source for nonproliferation applications analysis," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 954, 161849, 2020.
18. M. Y. Hua, B. Goddard, C. Lloyd, E. C. Leppink, S. A. Abraham, J. D. Noey, S. D. Clarke, and S. A. Pozzi, "Simulation of the Nondestructive Assay of  $^{237}\text{Np}$  using Active Neutron Multiplicity Counting," *Nuclear Science and Engineering*, vol. 194, pp. 154-162, 2020.
19. C. A. Miller, B. Ludewigt, C. Geddes, S. A. Pozzi "Verification of dry storage cask loading using monoenergetic photon sources", *Annals of Nuclear Energy*, vol. 137, 2020.
20. M. Y. Hua, J. D. Hutchinson, G. E. McKenzie, T. H. Shin, S. D. Clarke, and S. A. Pozzi, "Derivation of the Two-Exponential Probability Density Function for Rossi-alpha Measurements of Reflected Assemblies and Validation for the Special Case of Shielded Measurements," *Nuclear Science and Engineering*, vol. 194, pp. 56-68, 2020.
21. S. A. Pozzi, S. D. Clarke, M. G. Paff, A. Di Fulvio, and R. T. Kouzes, "Comparative neutron detection efficiency in He-3 proportional counters and liquid scintillators," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 929, pp. 107-112, 2019.
22. P. F. Schuster, M. J. Marcath, S. Marin, S. D. Clarke, P. Talou, M. Devlin, R. Haight., R. Vogt, I. Stetcu, T. Kawano, J. Randrup, and S. A. Pozzi "High resolution measurement of tagged two-neutron energy and angle correlations in  $\text{Cf-}^{252}(\text{sf})$ ," *Physical Review C*, vol. 100, pp. 014605, 2019.
23. C. Sivals, J. McIntyre, A. Prinke, A. Day, C. Lynch, S. D. Clarke, and S. A. Pozzi, "stilbene cell development to improve radionuclide detection," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 923, pp. 72-78, 2019.

24. J. Arthur, R. Bahran, J. Hutchinson, and S. A. Pozzi, "Genetic algorithm for nuclear data evaluation applied to subcritical neutron multiplication inference benchmark experiments," *Annals of Nuclear Energy*, vol. 133, pp. 853-86, 2019.
25. Y. Morishita, A. Di Fulvio, S. D. Clarke, and S. A. Pozzi, "Organic scintillator-based alpha/beta detector for radiological decontamination", *Nuclear Instruments and Methods in Physics Research Section A*, vol. 935, pp. 207-213, 2019.
26. F. D. Becchetti, R. O. Torres-Isea, A. Di Fulvio, S. A. Pozzi, J. Nattress, I. Jovanovic, M. Febbraro, and N. Zaitseva, "Deuterated stilbene (stilbene-d12): An improved detector for fast neutrons", *Nuclear Instruments and Methods in Physics Research Section A*, vol. 908, pp. 376-382, 2019.
27. T. H. Shin, C. A. Bravo, W. Geist, J. Marlow, S. D. Clarke, and S. A. Pozzi, "Neutron-neutron angular and energy-angle correlations of plutonium samples with varying  $\alpha$ -ratio," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 946, 2019.
28. T. H. Shin, P. L. Feng, J. Carlson, S. D. Clarke, S. A. Pozzi, "Measured neutron light output response for trans-stilbene and small-molecule organic glass scintillators", *Nuclear Instruments and Methods in Physics Research Section A*, vol. 939, pp. 36-45, 2019.
29. T. H. Shin, J. Hutchinson, R. Bahran, and S. A. Pozzi, "A Note on the Nomenclature in Neutron Multiplicity Mathematics", *Nuclear Science and Engineering*, vol. 193, pp. 663-679, 2019.
30. W. M. Steinberger, M. L. Ruch, A. D. Fulvio, S. D. Clarke, and S. A. Pozzi, "Timing performance of organic scintillators coupled to silicon photomultipliers", *Nuclear Instruments and Methods in Physics Research Section A*, vol. 922, pp. 185-192, 2019.
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***Patents pending (inventors, title, date submitted)***

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