



2022 MTV Workshop

The Michigan League, University of Michigan
911 N. University Ave., Ann Arbor, MI 48104

Day 1, March 22, 2022		
8:30	Registration and poster set-up	Michigan League, 911 N. University Ave. Ann Arbor, MI 48109
9:00	Welcome & logistics	Shaun Clarke, MTV Associate Director, Sara Pozzi, MTV Director, University of Michigan
9:15	NNSA goals for MTV	Keith McManus, Deputy Director, Office of Proliferation Detection, NNSA
9:30	MTV year 3 accomplishments	Sara Pozzi, Faculty, MTV Director, University of Michigan
9:50	Ultrafast laser filament-induced fluorescence of chlamydomonas reinhardtii to identify uranium exposure	Lauren Finney, Graduate Student, University of Michigan
10:05	Nuclear forensics methodology development by employing machine learning methods to enable foreign nuclear fuel cycle monitoring	Patrick O'Neal, Graduate Student, Texas A&M University
10:20	Neutron and gamma imaging with a novel organic glass-based imager	Ricardo Lopez, Graduate Student, University of Michigan
10:35	BREAK - 20 mins	
10:55	Reconstructing SCRaP benchmark experiment multiplicity distributions from MCNP generated moments	Jawad Moussa, Graduate Student, University of New Mexico
11:10	Safeguarding naval reactors	Patrick Huber, Faculty, Virginia Tech University
11:25	Creating synthetic state declarations using Cyclus	Katie Mummah, Graduate Student, University of Wisconsin
11:40	A new first year undergraduate engineering and technical communication course emphasizing radiation detection and protection	Kim Kearfott, Faculty, University of Michigan
11:55	Group photo	Michigan League
12:00	General luncheon	Box lunches - seating throughout Michigan League
	National lab "Meet and Greet", all students and lab POCs	Michigan Room, Michigan League
13:00	Body-wave magnitude of the six underground nuclear tests in North Korea	Won-Young Kim, Faculty, Columbia University
13:15	The chemical explosion blast standard (1 kg TNT)	Samuel "Kei" Takazawa, Graduate Student, University of Hawai'i
13:30	Regional waveform-correlation detection for seismic events in and near Mongolia from 2012-2016	David Schaff, Faculty, Columbia University
13:45	PANEL: Alumni: Ciara Sivels, Cameron Miller, Jason Nattress, Valerie Nwadeyi, Felicia Sutanto	Moderated by: Sara Pozzi, Faculty, University of Michigan
14:30	NRTA with an isotopic neutron source	Peninah Levine, Graduate Student, on behalf of Farheen Naqvi, Faculty, Massachusetts Institute of Technology

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14:45	A portable apparatus for neutron resonance transmission analysis	Ethan Klein, Graduate Student, Massachusetts Institute of Technology
15:00	BREAK - 20 mins	
15:20	Phylogenetic sensitivity analysis to identify microbial signatures of environmental contamination	David Bernstein, Postdoc, University of California, Berkeley
15:35	High precision scintillator time profile measurements using an LAPPD	Edward Callahan, Graduate Student, University of California, Berkeley
15:50	Working towards an absolute reactor antineutrino flux measurement using PROSPECT-I data	Paige Kunkle, Graduate Student, Boston University
16:05	Spatial structure and expansion dynamics of laser-produced cerium plasmas	Emily Kwapis, Graduate Student, University of Florida
16:20	Poster overview presentations (1-minute each)	Odd-numbered poster presenters
16:45	Poster reception: Session A (odd-numbered posters)	Hussey and Vandenberg Rooms, Michigan League
17:45	Adjourn Day 1	

Day 2, March 23, 2022		
9:00	PANEL: Fellows: Kelly Truax, Kris Ogren, Tyler Johnson, Isabel Hernandez, Lauren Finney	Moderated by: Shaun Clarke, Faculty, University of Michigan
9:45	Neutron-gamma angular correlations in fission	Stefano Marin, Graduate Student, University of Michigan
10:00	N-SpecDir Bot: A neutron-detecting, spectrally- and directionally-sensitive robot for nuclear verification	Eric Lepowsky, Graduate Student, Princeton University
10:15	Destructive and nondestructive analyses of low-burnup low-enriched uranium for the validation of foreign fuel cycle nuclear forensics methodology	Sean Martinson, Graduate Student, Texas A&M University
10:30	BREAK - 20 mins	
10:50	Uncertainty quantification of the spherical optical model in fission fragment de-excitation	Kyle Beyer, Graduate Student, University of Michigan
11:05	Uncertainty analysis of near-field antineutrino-based safeguards	Matthew Dunbrack, Graduate Student, Georgia Institute of Technology
11:20	Active neutron multiplicity counting of kilogram quantities of highly enriched uranium	Flynn Darby, Graduate Student, University of Michigan

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11:35	Poster overview presentations (1-minute each)	Even-numbered poster presenters
12:00	General Luncheon	Box lunches - seating throughout Michigan League
12:45	Poster Reception: Session B (even-numbered posters)	Hussey and Vandenberg Rooms, Michigan League
13:45	PANEL: National Laboratory Partnerships: Milton Garces, Adam Hecht, Jesson Hutchinson, Meghan McGarry, Scott Thompson	Moderated by: Igor Jovanovic, Faculty, University of Michigan
14:30	Superheated droplet detector response to the source system for zero-knowledge verification	Jihye Jeon, Graduate Student, Princeton University
14:45	On the Tonga lamb wave	Milton Garces, Faculty, University of Hawai'i
15:00	Biosensors for detecting nuclear fuel cycle activities in the environment	Isis Fukai, Graduate Student, University of Tennessee, Knoxville
15:15	Towards an improved laser induced fluorescence imaging technique via testing of various laser wavelengths in pursuit of a portable system	Kelly Truax, Graduate Student, University of Hawai'i
15:30	Closing remarks and student awards	Prof. Sara Pozzi and Keith McManus
15:45	Adjourn Day 2	
16:00	Depart for optional lab tours	Cooley Building, 2355 Bonisteel Blvd, Ann Arbor, MI 48197
16:15	Lab tours - University of Michigan, Nuclear Engineering	

Poster Presentations

#	Title	Presenter Names
1	Time-encoded dual particle imager (LANTERN)	John Kuchta, Graduate Student University of Michigan
2	Advancements in coded aperture imaging for CdZnTe detectors	Alexander Rice, Graduate Student, University of Michigan
3	Windowed multipole and its use in sensitivity analysis	Matthew Lazaric, Graduate Student, University of New Mexico
4	Machine learning based reconstruction of antineutrinos in Water-Cherenkov detectors	Garrett Wendel, Graduate Student, Pennsylvania State University
5	Neutrino-induced nuclear reactions at the spallation neutron source	Tyler Johnson, Graduate Student, Duke University
6	Detection of prompt photofission neutrons from U-238 with a He-4 scintillation detector	Oskar Searfus, Graduate Student, University of Michigan

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7	Muon imaging for dry-cask storage verification	Jesus Valencia, Graduate Student, University of New Mexico
8	Event-by-event neutron gamma correlations in Pu-239	James Baker Jr., Undergraduate Student, University of Michigan
9	Pulse shape discrimination using a compact ASIC-based data acquisition system	Tingshuan Wu, Graduate Student, University of Michigan
10	Evaluating the ability of an artificial neural network system to detect shielded depleted uranium in intense photon fields	Tessa Maurer, Graduate Student, University of Michigan
11	The Mitchell Institute neutrino experiment at reactor (MINER) detector payload	Matthew Lee, Graduate Student, Texas A&M University
12	Time resolution of organic glass scintillators in various geometries	Leah Clark, Graduate Student, University of Michigan
13	Development of $^{241}\text{Am}^{13}\text{C}$ calibration sources for a large water Cherenkov detector	Colton Graham, Graduate Student, University of Michigan
14	Neural network applications toward accelerated neutral particle transport solutions	Lincoln Johnston, Graduate Student, University of Michigan
15	Detection of fast neutrons during photon active interrogation	Christopher Meert, Graduate Student, University of Michigan
16	Correlations between gamma-ray multiplicity and incident neutron energy in $^{239}\text{Pu}(n,f)$	Nathan Giha, Graduate Student, University of Michigan
17	Explosion data collected on an airborne platform by a smartphone and traditional sensors	Sarah Popenhagen, Graduate Student, University of Hawai'i
18	Comparison of two laser systems for monitoring physiological changes in moss (<i>Thuidium plicatile</i>) due to metal contamination using laser-induced fluorescence (LIF)	Haley Currier, Undergraduate Student, University of Hawai'i
19	Small organic scintillators for dosimetry	Noora Ba Sunbul, Graduate Student, University of Michigan
20	Reactor lifetime predictions from antineutrino yields	Jonah Cullen, Graduate Student, Georgia Institute of Technology
21	Development of a rover for autonomous imaging and identification of nuclear material	Katie Ballard, Undergraduate Student, University of Michigan
22	Verification of upcoming MCNP features for estimating nuclear data sensitivities in fixed source simulations	Juliann Lamproe, Graduate Student, University of Michigan
23	Light output characterization for small stilbene detectors	Andrew Panter, Undergraduate Student, University of Michigan
24	Predicting angular momentum of fission fragments using machine learning	Isabel Hernandez, Undergraduate Student, University of Michigan
25	Using the international monitoring system (IMS) to teach AI/ML skills to NE undergraduate students	Andreas Enqvist, Faculty, University of Florida (student co-author, Jeremiah Wright)
26	Opaque scintillators for topological reconstruction	Andrew Wilhelm, Graduate Student, University of Michigan
27	Quality control program for high precision radiation dose delivery	Jordan Noey, Graduate Student, University of Michigan

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28	A fully immersive virtual reality game for radiation protection education	Michael Robinson, Undergraduate Student, University of Michigan
29	Evaluation of one month of temporal data from multiple consumer-grade temporal radon detectors	Carly Evans, Undergraduate Student, University of Michigan
30	Extended reality training for a high radiation area protocol	Colin Stewart, Undergraduate Student, University of Michigan
31	The Intelligent Radiation Awareness Drone (IRAD): creation of an unmanned aerial vehicle with radiation hazard guided navigation	Marlee Trager, Undergraduate Student, University of Michigan
32	Small-scale isotopic identification: neutron resonance transmission analysis using a linac versus fusion source	Peninah Levine, Graduate Student, Massachusetts Institute of Technology
33	Hill-climbing and other algorithms for rapid radiation source location with a drone	Christopher Davis, Undergraduate Student, University of Michigan
34	Promising initial results in cryogenic decay energy spectroscopy for nuclear material assay and study of rare nuclear decays.	Alexander Kavner, Graduate Student, University of Michigan
35	Communications and computational system for an intelligent radiation awareness drone (IRAD)	Ryan Kim, Undergraduate Student, University of Michigan
36	An affordable radiation weather station for high school outreach	Andrew Kent, Undergraduate Student, University of Michigan
37	Photoionization simulation for improved RIMS accuracy	Henry Burns, Graduate Student, Georgia Institute of Technology
38	Plenoptic muon imaging of various test setups	Dominic Lioce, Undergraduate Student, University of New Mexico
39	Performance assessment tools for epithermal-neutron prompt gamma activation analysis	Nick Greci, Graduate Student, Pennsylvania State University