



American Nuclear Society
Nuclear Nonproliferation Policy Division



American Nuclear Society
Fuel Cycle and Waste Management Division

Advances in Nonproliferation Technology and Policy Conference (ANTPC) 2018

Technical Program



September 23-27, 2018
Wilmington, NC, USA
Hotel Ballast

Sunday, 9/23

11:00 AM - 6:00 PM	Registration	
2:00 - 5:00 PM	Fuel Cycle Simulation Using Cyclus Bellamy Room	MCNP6.2® Correlated Fission Capabilities and Associated Packages Dudley Room
	Reserve your Workshop Spot Here: nnp.ans.org/attend/fees/	
6:00 - 8:00 PM	Welcome Banquet // Riverview Terrace	

Monday, 9/24, Merrick Room

9:00 AM -12:00 PM	Plenary: The Importance of Nuclear Technical Leadership to Nonproliferation Linton Brooks Thomas Countryman William Ostendorff Moderated by: Mona Dreicer	
12:00-1:30 PM	Student Lunch // Harnett Room	
1:30-2:45 PM	Domestic Safeguards – Enhancing and Strengthening Capabilities Panel Cecil Parks (ORNL) // Alan Icenhour (ORNL) // Amy Whitworth (NNSA)	
2:45-3:00 PM	Break	
3:00 - 4:15 PM	Contemporary Practice of Nonproliferation Policy 25925 Rightsizing Export Control Requirements for Light Water Reactor Technology 26108 2018 NTI Nuclear Security Index Findings 25997 Nuclear Security Culture Assessment of Nonnuclear Facilities	

Nesbit
Dumbacher
Harris

Monday, 9/24, Lillington Room

9:00 AM -12:00 PM	Plenary: The Importance of Nuclear Technical Leadership to Nonproliferation Linton Brooks Thomas Countryman William Ostendorff Moderated by: Mona Dreicer	
12:00-1:30 PM	Student Lunch // Harnett Room	
1:30-2:45 PM	Weapons-usable material minimization 26623 High Flux Isotope Reactor Low-Enriched Uranium Core Designs and Challenges 25927 Progress toward eliminating use of HEU in Mo-99 production with a multi-physics simulation 26171 Prompt Neutron Decay Constant Measurements on a Lead Moderated, Copper Reflected Weapons Grade Plutonium System	Chandler Jun Kim McKenzie
2:45-3:00 PM	Break	
3:00 - 3:50 PM	Technologies for Arms Control & International Safeguards Verification 26172 Warhead verification experiments using nuclear resonance fluorescence 25946 Using Neutron Anisotropy as an Attribute for Arms-Control Verification Applications	Vavrek Shin
4:00-5:15 PM	Nuclear Fuel Cycle Safeguards 25919 Analysis of Surrogate Elements for Nuclear Materials in Rapid Setting Cement Using Laser-Induced Breakdown Spectroscopy (LIBS) 26166 Impact of Fuel Assembly Location on Verification of Dry Cask Contents Using Radiation Detection 25942 Trace Isotopic Ratios within the Noble Metal Phase as Indicators of Reactor Class	Motny Harkness Palmer

Monday, 9/24, Caswell Room

9:00 AM -12:00 PM	Plenary: The Importance of Nuclear Technical Leadership to Nonproliferation Linton Brooks Thomas Countryman William Ostendorff Moderated by: Mona Dreicer	
12:00-1:30 PM	Student Lunch // Harnett Room	
1:30-2:45 PM	Challenges to Computational Radiation Transport Methods in Nuclear Security Applications 26157 Recent Developments and Emerging Research Challenges in Monte Carlo Transport Sensitivity Methods for Nuclear Nonproliferation 25914 On the Application of the Discrete Ordinates Method to Fixed-Source Problems (Forward and Adjoint) 25931 MCNPX-PoliMi Applications in Nuclear Security	Kiedrowski Favorite Pozzi
2:45-3:00 PM	Break	
3:00 - 4:40 PM	Challenges to Computational Radiation Transport Methods in Nuclear Security Applications 25990 Rapid 1-D and 3-D Radiation Transport and Detector Response 26106 Mitigation of Ray Effects in SN Solutions through Monte Carlo Coupling 25951 Hammer: A Monte Carlo Particle Transport Solver to Support Nonproliferation Applications of the THOR Deterministic SN Code 25719 Experimental Application of Bayesian Inference to Wide Area Urban Source Search	Mitchell Herring Gonzalez Mattingly

Tuesday, 9/25, Merrick Room

09:00-10:40 AM	<p align="center">Pyroprocessing Material Control & Accountancy Strategies</p> <p>26119 Pyre: A Cyclus Pyroprocessing Facility Archetype Westphal 25876 Pyroprocessing Safeguards Approach Cipiti 26111 Safeguards Analysis of Pyroprocessing Product Ingot Diversions Possible through Neutron Source Substitutions Woo 25950 (a,n) Source Terms as a Novel Signature for Pyroprocessing Safeguards Gilliam</p>
10:40-10:55 AM	Break
10:55 AM -12:10 PM	<p align="center">Advances in Radiation Transport Methods for Nonproliferation</p> <p>25717 Advances in Neutron List-Mode Data Processing for Differential Die-Away Instruments Mendoza 25627 Validation and Detector Location Sensitivity Analysis of the DIMP Inverse Particle Transport Model Nelson 26012 Progress in Deterministically Predicting Tally Variance with DXTRAN Regions Kulesza</p>
12:10-1:30 PM	Lunch // Harnett Room
1:30-3:35 PM	<p align="center">Data Synthesis for Pyroprocessing Safeguards</p> <p>25936 A Signatures-Based Approach to Electrochemical Reprocessing Safeguards Modeling & Evaluation Skutnik 25948 Elemental and Isotopic Concentration Tracking for Electrochemical Reprocessing Safeguards Bachmann 25993 Applying Radiological Signatures Information for Electrochemical Reprocessing Safeguards Gilliam 26130 Source Term Development and Response Analysis for HKED Simulation in Electrochemical Reprocessing Mitchell 26185 A Semi-Empirical HKED Model For Pyroprocessing Safeguards Evaluation Cooper</p>
3:35-3:50 PM	Break
3:50 - 5:20 PM	<p align="center">Nonproliferation of Cyber Weapons</p> <p>25906 Cybersecurity Concerns for Sharing Distributed Antenna Systems Benjamin</p>
6:00 - 8:00 PM	<p align="center">Poster Session Reception</p>

Tuesday, 9/25, Lillington Room

09:00-10:40 AM	<p style="text-align: center;">Enhancements to nuclear data</p> <div> <div>25935 O-18 (alpha,n) Evaluated Cross Sections to Improve National Security Applications</div> <div>Pigni</div> </div> <div> <div>26183 How accurately we know the standard 252Cf(sf) neutron multiplicity?</div> <div>Capote</div> </div> <div> <div>26140 A Neutron Multiplicity Measurement Parameter for Neutron Source Verification</div> <div>McSpaden</div> </div> <div> <div>26177 Validation of MCNP6 Using Subcritical Benchmark Experiments</div> <div>Bahrn</div> </div>
10:40-10:55 AM	Break
10:55 AM -12:10 PM	<p style="text-align: center;">Detection using Advanced Data Science Methods</p> <div> <div>26182 Determining Shielding Configuration of Neutron Sources Using a Genetic Algorithm and Monte Carlo Libraries</div> <div>Stooksbury</div> </div> <div> <div>26143 Comparison of Passive and Active Neutron Multiplicity Measurements</div> <div>Hutchinson</div> </div> <div> <div>26129 Peak Locating in Gamma-Ray Spectra Using Wavelet Processing and Support Vector Regression with Applications to Nuclear Nonproliferation</div> <div>Alamianotis</div> </div>
12:10-1:30 PM	Lunch // Harnett Room
1:30-3:35 PM	<p style="text-align: center;">Sensitivity and Uncertainty Analysis</p> <div> <div>26127 Uncertainty Analysis for Neutron Active Interrogation Calculations</div> <div>Bledsoe</div> </div> <div> <div>25938 Statistical analysis of fission product concentration uncertainties from MCNP6 multi-time step depletion calculation</div> <div>Minamigawa</div> </div> <div> <div>26116 Uncertainty Analysis of Fission Product Concentrations in MCNP Depletion Calculations</div> <div>Schafer</div> </div> <div> <div>25924 Sensitivity Analysis and Optimization of Cf-252(sf) Observables in CGMF</div> <div>Carter</div> </div> <div> <div>25509 Assessing Material Inventory Uncertainties in Integrated Fuel Cycle Simulations</div> <div>Mouginot</div> </div>
3:35-3:50 PM	Break
3:50 - 5:20 PM	<p style="text-align: center;">Industry Perspectives (Panel)</p>
6:00 - 8:00 PM	<p style="text-align: center;">Poster Session Reception</p>

Wednesday, 9/26, Merrick Room

09:00-10:40 AM	<p align="center">Human Capital Development</p> <div> <div>25727 Safeguards Knowledge Retention and Management at Los Alamos National Laboratory</div> <div>26121 Nuclear Engineering and Nonproliferation University Engagement: Providing Unique Technical Opportunities for a Talented Pipeline</div> <div>25890 The Integral Nonproliferation Introductory Teaching and Learning Reactor Module Implemented at UC Davis</div> <div>25928 Building an Interdisciplinary Graduate Certificate in Nuclear Nonproliferation Science and Policy at North Carolina State University</div> </div> <div> <div>Trahan</div> <div>Verschuren</div> <div>Mendoza</div> <div>Boettcher</div> </div>
10:40-10:55 AM	<p align="center">Break</p>
10:55 AM - 12:25 PM	<p align="center">Education and Training in Nonproliferation (Panel)</p>
12:25-2:00 PM	<p align="center">Lunch // Harnett Room</p>
2:00-3:40 PM	<p align="center">Research by NNIS Graduate Fellows</p> <div> <div>26063 MATADOR: Mobile Adaptive Time-Encoded Asymmetric Dual-particle One-D Rotating Imager</div> <div>25916 Reactor Simulation of Evolution in Detector Baseline for Antineutrino Monitoring at the High Flux Isotope Reactor</div> <div>25941 Determination of Special Nuclear Material Isotopic Signatures Using Conversion Electron Spectroscopy for Nuclear Safeguards</div> </div> <div> <div>Shah</div> <div>Conant</div> <div>Watson</div> </div>
3:40 - 4:00 PM	<p align="center">Break</p>
4:00-7:00 PM	<p align="center">USS North Carolina Battleship Tour</p> <p align="center">Reserve your Tour Spot Here: nnp.ans.org/attend/fees/</p>

Wednesday, 9/26, Lillington Room

09:00-10:40 AM	<p align="center">Nondestructive and Destructive Assay Methods: Radiation Detection</p> <div> <div>26154 Fast Neutron Detection in a High-Photon Field using Organic Scintillators</div> <div>26100 Comparison of single- and multi-gate methods for neutron multiplicity uncertainty analysis</div> <div>25926 Grain Size and Density Separation Effects on Luminescence Dose Estimates Using Brick Material</div> <div>25915 Using Borated Polyvinyl Toluene for Discriminating SNM from NORM, Medical and Industrial Sources.</div> </div> <div> <div>Meert</div> <div>Baughner</div> <div>O'Mara</div> <div>Hayes</div> </div>
10:40-10:55 AM	<p align="center">Break</p>
10:55 AM - 12:25 PM	<p align="center">Risk of Proliferation (PANEL)</p>
12:25-2:00 PM	<p align="center">Lunch // Harnett Room</p>
2:00-3:40 PM	<p align="center">Techniques for Nuclear Forensics and Environmental Sampling</p> <div> <div>25953 Enabling Nuclear Forensics Applications from the Mineral Particulate in Contamination Surveys</div> <div>25913 Incremental Gains of a Conservative Transuranic Alpha Activity Assay Method in Air Samples</div> <div>25952 Gross Uncertainties in Treaty Verification by Aerosol Assay</div> <div>25954 Differential Isotopic Diffusion in Nuclear Forensics of Fallout</div> </div> <div> <div>Hayes</div> <div>Cope</div> <div>Hayes</div> <div>Hayes</div> </div>
3:40 - 4:00 PM	<p align="center">Break</p>
4:00-7:00 PM	<p align="center">USS North Carolina Battleship Tour</p> <p align="center">Reserve your Tour Spot Here: nnp.ans.org/attend/fees/</p>

Thursday, 9/27

8:00 - 9:00 AM	Closing Session
9:00 AM - 12:00 PM	GE Manufacturing Tour Reserve your Tour Spot Here: nnp.ans.org/attend/fees/