## MONDAY, JUNE 10

### SESSION 1 – Plenary I

**Discussion Leader: A. Erickson (Georgia Tech, USA)**

**8:00** **Welcoming Remarks – Anna Erickson**

**8:15** **Mark Wallace (LANL, USA)**
*Hard Radiation Sensing for Space-based Nuclear Detonation Detection (SNDD) (12)*

**8:50** **Bicheng Liu (NUCTECH COMPANY LIMITED, China)**
*A Cargo/Vehicle CT Inspection System (45)*

**9:25** **Ceri Clemett (AWE, UK)**
*How a decade of active interrogation work led us to the need for mono-energetic sources, and why? (50)*

**10:00 Coffee Break**

### SESSION 2 – Plenary II

**Discussion Leader: A. Bernstein (LLNL, USA)**

**10:30** **Nathaniel Bowden (LLNL, USA)**
*The PROSPECT Short Baseline Reactor Experiment (33)*

**11:05** **Samuel Chan (Brown University, USA)**
*Current Status of LZ Dark Matter Experiment (37)*

**11:40** **David Woodward (Penn. State University, USA)**
*Latest analyses of the LUX dark matter experiment (65)*

**12:15 Lunch, Inter-Session**

**16:30 Coffee and Discussion**

### SESSION 3 – Space Applications I

**Discussion Leader: S. Nowicki (LANL, USA)**

**17:00** **Joseph Minow (NASA, USA)**
*The Space Radiation Environment and its Effects on Space Systems (5)*

**17:25** **Craig Hardgrove (Arizona State University, USA)**
*Neutron spectroscopy of the Moon using a small, low-cost cubesat (13)*

**17:50** **Ann Parsons (NASA, USA)**
*Nuclear Techniques for the Planetary Sciences (84)*

**18:15** **Alberto Mengarelle (INFN – Bologna, Italy)**
*Particle Therapy and Radioprotection in Space with the FOOT Experiment (8)*

**18:40** **David Strivay (Université de Liège, Belgium)**
*Material analysis and testing using a proton therapy facility (56)*

**20:00 Dinner**

## TUESDAY, JUNE 11

### SESSION 4 – Novel Detectors and Materials

**Discussion Leader: M. Wallace (LANL, USA)**

**8:00** **Nataila Zaitseva (LLNL, USA)**
*New solid-state organic scintillators for fast and thermal neutron detection (78)*

**8:25** **Hongxing Jiang (Texan Tech University, USA)**
*Toward achieving large area and high efficiency neutron detectors based on BN epilayers (1)*

**8:50** **Massimiliano Fiorini (INFN, Italy)**
*Single-photon imaging detector with O(10) ps timing and <10 microns position resolutions (19)*

**9:15** **Martin Niki (Institute of Physics AS CR, Czech Republic)**
*Scintillation response of InGaN/GaN multiple quantum well (52)*

**9:40** **Juan Manfredi (U.C. Berkeley, USA)**
*An Optically Segmented Single-Volume Scatter Camera for Compact, High-efficiency Neutron Imaging (66)*

**10:05 Coffee and Poster Session**

### 10:05 – 17:00 POSTER I (SESSION 5)

**Discussion Leader: L. Maloney (Ga. Tech., USA)**

**1) D. Strivay** *PIXE-PIGE and Proton Activation Analysis of Analysis of Roman archeological artefacts (54)*

**2) M. Tatarakis** *Secondary sources generated with the ZEUS 45TW laser system at CPPL (57)*

**3) J. Tous** *Using GaN Quantum Well Detector in X-ray Microradiography (51)*

**4) C.L. Fontana** *An Autonomous Cosmic-Ray Neutron Probe for Environmental and Hydrological Applications: Data Acquisition System and On-line Analysis (59)*

**5) J. Kim** *Quantitative analysis of NaI(Tl) Gamma-ray Spectrometer Using an Artificial Neural Network: a Monte Carlo Simulation Study (81)*

### SESSION 6 – Accelerators & Neutron Generators

**Discussion Leader: C. Clemett (AWE, UK)**

**10:35** **Mats Lindroos (ESS, Sweden)**
*Enabling the construction of a big science facility on a green field site through international collaboration (79)*

**11:00** **Nick Gazis (ESS, Sweden)**
*Mechanical Engineering & Technology and Non-Destructive Testing at the European Spallation Source (ESS) (40)*

**11:25** **Evangelos Gazis (N. T. U. of Athens, Greece)**
*Photocathode study of the Compact Light Collaboration for a novel XFEL development (42)*

**11:50** **Vladimir Yurevich (Joint Inst. Nuclear Research, Russian Federation)**
*Development of scintillation detectors with SiPM readout for the NICA project (3)*

**12:15** **Pierluigi Casolaro (INFN - Napoli, Italy)**
*Nuclear physics experiments with a medical cyclotron (71)*

**12:40 Lunch, Inter-Session**

**16:30 Coffee and Poster Session**

### SESSION 7 – Detectors in Nuclear Security

**Discussion Leader: M. Ojaruega (NGA, USA)**

**17:00** **Aleksandr Saverskiy (Rapiscan – AS&E, USA)**
*Method and Source for Intra-Pulse Dual-Energy X-Ray Cargo Inspection (5)*

**17:25** **Willy Kaye (H3D, USA)**
*Challenges Applying Gamma-Ray Imaging Spectrometers to Security Applications (69)*

**17:50** **Leslie Nakae (LLNL, USA)**
*Fast Neutron and Gamma Ray Detection and Multiplicity Counting with LLNL Liquid Scintillator (86)*

**18:15** **Shaul Barken (HHT, USA)**
*Very High Count Rate SDD for Synchrotron Applications (14)*

**18:40** **Paul Rose (ORNL,USA)**
*Silicone-based Scintillators for Multi-Particle Detection (80)*

**20:00 Dinner**

## WEDNESDAY, JUNE 12 – Free day

**Dinner at your leisure**

## THURSDAY, JUNE 13

### SESSION 8 – Antineutrino and Dark Matter Physics

**Discussion Leader: N. Bowden (LLNL, USA)**

**8:00** **Wei Wang (Sun Yat-sen University, China)**
*Study Reactor Fuel Evolution by Measuring Antineutrino Flux and Its Energy Spectrum (30)*

**8:25** **Luca Tomassetti (INFN - Ferrara, Italy)**
*New ideas on prospective low energy threshold detectors for Dark Matter searches (18)*

**8:50** **Tommaso Comellato (Tech. U. Munich, Germany)**
*Search for neutrinoless double beta decay with GERDA and beyond (58)*

**9:15** **Dan McKinsey (U.C. Berkeley, USA)**
*Ultrahigh Voltage and Light Collection in Liquid Xenon (70)*

**9:40** **Karsten Heeger (Yaly University, USA)**
*PROSPECTs for Future Studies of Reactor Neutrinos at Short Baselines (32)*

**10:05 Coffee and Poster Session**

### 10:05 – 17:00 POSTER II (SESSION 9)

**Discussion Leader: M. Durbin (Penn. State, USA)**

**1) V. Variale** *Neutron Imager with Micro Channel Plates (MCP) in Electrostatic Mirror Configuration: Neutron Beam Test (21)*

**2) K. Sedlackova** *Effect of electron irradiation on spectrometric properties of Schottky barrier CdTe radiation detectors (24)*

**3) N. Bowden** *Latest Results from the Neutron Induced Fission Fragment Tracking Experiment (34)*

**4) O. Sidorova** *Cross-correlation method for delayed fission neutron yield measurement (83)*

**5) L. Maloney** *Measurement of neutron and gamma spectra intrinsic to therapeutic proton beam environment (63)*

### SESSION 10 – Medical, Biological and Laboratory Applications

**Discussion Leader: J. Tickner (Chrysos Corp, Australia)**

**10:35** **Alex Hermanne (Vrije U. Brussel, Belgium)**
*Deuteron induced reactions on Tellurium: an alternative for production of $^{123}$I ? (27)*

**11:00** **Andy Buffer (U. Cape Town, South Africa)**
*Neutron transmission studies for concrete used in the nuclear industry (6)*

**11:25** **Malcolm Joyce (Lancaster University, UK)**
*Oil/gas pipeline characterization using a fast neutron backscatter technique (61)*

**11:50** **Justin Delaney (CRISO, Australia)**
*Determination of electron and x-ray spectra of a linear accelerator in the 7-14 MeV range using photon activation (4)*

**12:15** **Paul Scoullar (Southern Innovation, Australia)**
*High Rate Pulse Processing Technology for Photon Science and Other Industrial Applications (75)*

**12:40 Lunch, Inter-Session**

**16:30 Coffee and Poster Session**

### SESSION 11 – Detection of Fissile Material and Contraband

**Discussion Leader: P. Rose (ORNL, USA)**

**17:00** **James Tickner (Chrysos Corp. Ltd., Australia)**
*An Industrial Photonuclear Assay System for Minerals Applications (9)*

**17:25** **Matthew Durbin (Penn. State, USA)**
*Development of a Fully Connected Residual Neural Network for Directional Gamma Ray Detection (26)*

**17:50** **Luke Maloney (Ga. Tech., USA)**
*An SiPM-based imaging array for spectroscopic-capable nondestructive material assay (64)*

**18:15** **Cristiano Lino Fontana (U. of Padua, Italy)**
*First Results of the Field Trials of the Rapidly Relocatable Tagged Neutron Inspection System (RRTNIS) of the European H2020 C-BORD Project (60)*

**20:00 Dinner**

## FRIDAY, JUNE 14

### SESSION 12 – Detectors, Dosimetry and Radiological Safety

**Discussion Leader: A. Buffer (Univ. of Cape Town, South Africa)**

**8:00** **David Pagano (Università degli Studi di Brescia & INFN Pavia)**

*A cosmic muon tracking system for the stability monitoring of historical buildings (20)*

**8:25 Simone Amaducci (U. Liverpool, UK)**
*Measurement of the $^{235}U(n,f)$ cross section at n_TOF from thermal to 170 keV (31)*

**8:50 Pierluigi Casolaro (INFN - Napoli, Italy)**
*Absolute dosimetry with radiochromic films (73)*

**9:15 Laura Harkness-Brennan (U. Liverpool, UK)**
*Development of the Segmented Inverted Coaxial Germanium (SIGMA) Detector for Enhanced Gamma-ray Spectroscopy and Tracking (44)*

**9:40 Shakir Zeinalov (Joint Inst. Nuclear Research, Russian Federation)**
*New Setup for Prompt Fission Neutron Investigation (36)*

**10:05 Coffee Break**

**SESSION 13 – Nuclear Safeguards, Security and Forensics**

**Discussion Leader: M. Joyce (Lancaster Univ., UK)**

**10:35 Anna Erickson (Georgia Tech, USA)**
*Consortium for Enabling Technologies and Innovation: Overview*

**10:50 Michael Short (MIT, USA)**
*New Materials Science Methods for Nuclear Forensics: Picosecond Ultrasonics, Nanocalorimetry, and Magnetism for Ultra-Low Dose Measurements of Enrichment Equipment (87)*

**11:15 Lei (Raymond) Cao (Ohio State Univ., USA)**
*In-situ Detection of Uranium in Molten LiCl-KCl Salt Using a 4H-SiC Detector (76)*

**11:40 Oluwatomi Akindele (LLNL, USA)**
*Far Field Monitoring of Reactor Antineutrinos for Nonproliferation (29)*

**12:05 Brett Isselhardt (LLNL, USA)**
*Resonance Ionization Mass Spectrometry for Actinide Isotopic Analysis (68)*

**12:30 Lunch, Inter-Session**

**16:30 Coffee and Discussion**

**SESSION 14 – Space Applications II**

**Discussion Leader: A. Klimenko (LANL, USA)**

**17:00 Vladimir Egorov (IMT RAS, Russian Federation)**
*Possibilities of radiation fluxes waveguide-resonance propagation use for low energy nuclear synthesis (48)*

**17:25 Stephen Wender (LANL, USA)**
*Measurement of Thermal Neutron Environments in aircraft with the TinMan Instrument (46)*

**17:50 Quinn Marksteiner (LANL, USA)**
*Accelerators in Space (28)*

**18:15 Johan Mars (U. Western Cape, South Africa)**
*PIXE, PIGE and Backscattering Spectrometry as analytical techniques (72)*

**20:00 Cocktails/ Gala Dinner**

## Notes

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**INTERNATIONAL CONFERENCE ON APPLICATIONS OF NUCLEAR TECHNIQUES**

# CONFERENCE PROGRAM

**CONFERENCE CHAIRS**

Anna Erickson (Georgia Tech, USA)
Adam Bernstein (LLNL, USA)
Paul Rose (ORNL, USA)

**ADVISORY COMMITTEE**

George Vourvopoulos (WKU Emeritus, USA)
Marianne Hamm (R&M Technical Enterprises, USA)
Robert Hamm (R&M Technical Enterprises, USA)
Nick Gazis (European Spallation Source, Sweden)
Sara Pozzi (University of Michigan, USA)
Karsten Heeger (Yale University, USA)
Donald Hornback Department of Energy/NNSA, USA)
Alexei Klimenko (LANL, USA)
Mitaire Ojaruega (NGA, USA)
Daniel McKinsey (UC Berkeley, USA)
James Tickner (Chrysos Corporation Ltd, Australia)
Kai Vetter (LBNL, USA)
Demetre Zafiropoulos (INFN, Italy)